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Living Voices

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PREFACE

ONE need not offer any apology for producing an anthology, for anthologies have become a recognized means of imparting essential knowledge to young students all over the world. Whatever uncharitable persons may say about the production of anthologies, it cannot be denied that this work is highly arduous for it is something which requires literary discrimination of a high degree and a social perspective which takes into account not only the present and the past but also the future. It is after bearing these factors in mind that the present anthology has been produced. So far as the literary quality of this anthology goes, an attempt has been made to strike a happy balance between the standard authors of English prose who are acknowledged masters everywhere and those who have used English prose as a work-a-day medium for their ideas with the utmost distinction. The idea is that while a student may find something in these standard writers to inspire him, he may equally find something in the others to be able to emulate them. It is, however, not only the aim of this anthology to provide the students with fine specimens of English prose. An attempt has also been made to acquaint the students with those values which humanity has cherished all these years and those problems which confront mankind at present. By doing so the aim has been to widen the mental and social horizon of the students. At the same time, specimens of different kinds of prose have been included in it so that the reader may be able to find for himself in which direction his own literary inclinations lie. After having discovered that, he can cultivate that bent of mind as well as he can. In addition to all this the student will find in this anthology plenty of material to stimulate his thinking and love of adventure on the physical as well as the mental plane, and it will

be admitted that both these qualities are needed by the students everywhere.

Brief notes are added which will help the students in understanding the text.

Hoshiarpur

3 March 1955

D. C. S.

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THE NATIONAL BACKGROUND

I

THE IMPEACHMENT

WHEN Parliament met in the following winter, the Commons proceeded to elect a committee for managing the impeachment. Burke stood at the head ; and with him were associated most of the leading members of the Opposition. But when the name of Francis was read a fierce contention arose. It was said that Francis and Hastings were notoriously on bad terms, that they had been at feud during many years, that on one occasion their mutual aversion had impelled them to seek each other's lives, and that it would be improper and indelicate to select a private enemy to be a public accuser. It was urged on the other side with great force, particularly by Mr Windham, that impartiality, though the first duty of a judge, had never been reckoned among the qualities of an advocate ; that in the ordinary administration of criminal justice among the English, the aggrieved party, the very last person who ought to be admitted into the jury-box, is the prosecutor ; that what was wanted in a manager was, not that he should be free from bias, but that he should be able, well informed, energetic, and active. The ability and information of Francis were admitted ; and the very animosity with which he was reproached, whether a virtue or a vice, was at least a pledge for his energy and activity. It seems difficult to refute these arguments. But the inveterate hatred borne by Francis to Hastings had excited general disgust. The house decided that Francis should not be a manager. Pitt voted with the majority, Dundas with the minority.

In the meantime, the preparations for the trial had proceeded rapidly ; and on 13 February 1788, the sittings of the Court commenced. There have been spectacles more dazzling to the eye, more gorgeous with jewellery

and cloth of gold, more attractive to grown-up children, than that which was then exhibited at Westminster ; but, perhaps, there never was a spectacle so well calculated to strike a highly-cultivated, a reflecting, an imaginative mind. All the various kinds of interest which belong to the near and to the distant, to the present and to the past, were collected on one spot, and in one hour. All the talents and all the accomplishments which are developed by liberty and civilization were now displayed, with every advantage that could be derived both from co-operation and from contrast. Every step in the proceedings carried the mind either backward, through many troubled centuries, to the days when the foundations of our constitution were laid ; or far away, over boundless seas and deserts, to dusky nations living under strange stars, worshipping strange gods, and writing strange characters from right to left. The High Court of Parliament was to sit, according to forms handed down from the days of the Plantagenets, on an Englishman accused of exercising tyranny over the lord of the holy city of Benares, and over the ladies of the princely house of Oudh.

The place was worthy of such a trial. It was the great hall of William Rufus, the hall which had resounded with acclamations at the inauguration of thirty kings, the hall which had witnessed the just sentence of Bacon and the just absolution of Somers, the hall where the eloquence of Stafford had for a moment awed and melted a victorious party inflamed with just resentment, the hall where Charles had confronted the High Court of Justice with the placid courage which has half redeemed his fame. Neither military nor civil pomp was wanting. The avenues were lined with grenadiers. The streets were kept clear by cavalry. The peers, robed in gold and ermine, were marshalled by the heralds under Garter King-at-arms. The judges in their vestments of

state attended to give advice on points of law. Near a hundred and seventy lords, three-fourths of the Upper House as the Upper House then was, walked in solemn order from their usual place of assembling to the tribunal. The junior Baron present led the way, George Elliott, Lord Heathfield, recently ennobled for his memorable defence of Gibraltar against the fleets and armies of France and Spain. The long procession was closed by the Duke of Norfolk, Earl Marshal of the realm, by the great dignitaries, and by the brothers and sons of the King. Last of all came the Prince of Wales, conspicuous by his fine person and noble bearing. The gray old walls were hung with scarlet. The long galleries were crowded by an audience such as has rarely excited the fears or the emulation of an orator. There were gathered, together from all parts of a great, free, enlightened, and prosperous empire, grace and female loveliness, wit and learning, the representatives of every science and of every art. There were seated round the Queen the fair-haired young daughters of the house of Burnswick. There the Ambassadors of great Kings and Commonwealths gazed with admiration on a spectacle which no other country in the world could present. There Siddons, in the prime of her majestic beauty, looked with emotion on a scene surpassing all the imitations of the stage. There the historian of the Roman empire thought of the days when Cicero pleaded the cause of Sicily against Verres, and when, before a senate which still retained some show of freedom, Tacitus thundered against the oppressor of Africa. There were seen, side by side, the greatest painter and the greatest scholar of the age. The spectacle had allured Reynolds from that easel which has preserved to us the thoughtful foreheads of so many writers and statesmen, and the sweet smiles of so many noble matrons. It had induced Parr to suspend his labours in that dark and profound

mine from which he had extracted a vast treasure of erudition, a treasure too often buried in the earth, too often paraded with injudicious and inelegant ostentation, but still precious, massive, and splendid. There appeared the voluptuous charms of her to whom the heir of the throne had in secret plighted his faith. There too was she, the beautiful mother of a beautiful race, the Saint Cecilia whose delicate features, lighted up by love and music, art has rescued from the common decay. There were the members of that brilliant society which quoted, criticized, and exchanged repartees, under the rich peacock-hangings of Mrs Montague. And there the ladies whose lips, more persuasive than those of Fox himself, had carried the Westminster election against palace and treasury, shone round Georgiana Duchess of Devonshire.

The Sergeants made proclamation. Hastings advanced to the bar, and bent his knee. The culprit was indeed not unworthy of that great presence. He had ruled an extensive and populous country, had made laws and treaties, had sent forth armies, had set up and pulled down princes. And in his high place he had so borne himself, that all had feared him, that most had loved him, and that hatred itself could deny him no title to glory, except virtue. He looked like a great man, and not like a bad man. A person small and emaciated, yet deriving dignity from a carriage which, while it indicated deference to the court, indicated also habitual self-possession and self-respect, a high and intellectual forehead, a brow pensive, but not gloomy, a mouth of inflexible decision, a face pale and worn, but serene, on which was written, as legibly as under the picture in the council-chamber at Calcutta, *Mens æqua in arduis*; such was the aspect with which the great Proconsul presented himself to his judges.

His counsel accompanied him, men all of whom were afterwards raised by their talents and learning to the

highest posts in their profession, the bold and strong-minded Law, afterwards Chief Justice of the King's Bench; the more humane and eloquent Dallas, afterwards Chief Justice of the Common Pleas; and Plomer, who, near twenty years later, successfully conducted in the same high court the defence of Lord Melville, and subsequently became Vice-Chancellor and Master of the Rolls.

But neither the culprit nor his advocates attracted so much notice as the accusers. In the midst of the blaze of red drapery, a space had been fitted up with green benches and tables for the Commons. The managers, with Burke at their head, appeared in full dress. The collectors of gossip did not fail to remark that even Fox, generally so regardless of his appearance, had paid to the illustrious tribunal the compliment of a wearing a bag and sword. Pitt had refused to be one of the conductors of the impeachment, and his commanding, copious, and sonorous eloquence was wanting to that great muster of various talents. Age and blindness had unfitted Lord North for the duties of a public prosecutor; and his friends were left without the help of his excellent sense, his tact, and his urbanity. But, in spite of the absence of these two distinguished members of the Lower House, the box in which the managers stood contained an array of speakers such as perhaps had not appeared together since the great age of Athenian eloquence. There were Fox and Sheridan, the English Demosthenes and the English Hyperides. There was Burke, ignorant, indeed, or negligent of the art of adapting his reasonings and his style to the capacity and taste of his hearers, but in amplitude of comprehension and richness of imagination superior to every orator, ancient or modern. There, with eyes reverentially fixed on Burke, appeared the finest gentleman of the age, his form developed by every manly exercise, his face beam-

ing with intelligence and spirit, the ingenious, the chivalrous, the high-souled Windham. Nor, though surrounded by such men, did the youngest manager pass unnoticed. At an age when most of those who distinguish themselves in life are still contending for prizes and fellowships at college, he had won for himself a conspicuous place in parliament. No advantage of fortune or connexion was wanting that could set off to the height his splendid talents and his unblemished honour. At twenty-three he had been thought worthy to be ranked with the veteran statesmen who appeared as the delegates of the British Commons, at the bar of the British nobility. All who stood at that bar, save him alone, are gone, culprit, advocates, accusers. To the generation which is now in the vigour of life, he is the sole representative of a great age which has passed away. But those who, within the last ten years, have listened with delight, till the morning sun shone on the tapestries of the House of Lords, to the lofty and animated eloquence of Charles Earl Grey, are able to form some estimate of the powers of a race of men among whom he was not the foremost.

The charges and the answers of Hastings were first read. The ceremony occupied two whole days, and was rendered less tedious than it would otherwise have been by the silver voice and just emphasis of Cowper, the clerk of the court, a near relation of the amiable poet. On the third day Burke rose. Four sittings were occupied by his opening speech, which was intended to be a general introduction to all the charges. With an exuberance of thought and a splendour of diction which more than satisfied the highly raised expectation of the audience, he described the character and institutions of the natives of India, recounted the circumstances in which the Asiatic empire of Britain had originated, and set forth the constitution of the Company and of the

English Presidencies. Having thus attempted to communicate to his hearers an idea of Eastern society, as vivid as that which existed in his own mind, he proceeded to arraign the administration of Hastings as systematically conducted in defiance of morality and public law. The energy and pathos of the great orator extorted expressions of unwonted admiration from the stern and hostile Chancellor, and, for a moment, seemed to pierce even the resolute heart of the defendant. The ladies in the galleries, unaccustomed to such displays of eloquence, excited by the solemnity of the occasion, and perhaps not unwilling to display their taste and sensibility, were in a state of uncontrollable emotion. Handkerchiefs were pulled out; smelling-bottles were handed round; hysterical sobs and screams were heard: and Mrs Sheridan was carried out in a fit. At length the orator concluded. Raising his voice till the old arches of Irish oak resounded, ‘Therefore,’ said he, ‘hath it with all confidence been ordered by the Commons of Great Britain, that I impeach Warren Hastings of high crimes and misdemeanours. I impeach him in the name of the Commons’ House of Parliament, whose trust he has betrayed. I impeach him in the name of the English nation, whose ancient honour he has sullied. I impeach him in the name of the people of India, whose rights he has trodden under foot, and whose country he has turned into a desert. Lastly, in the name of humane nature itself, in the name of both sexes, in the name of every age, in the name of every rank, I impeach the common enemy and oppressor of all!’

When the deep murmur of various emotions had subsided, Mr Fox rose to address the Lords respecting the course of proceeding to be followed. The wish of the accusers was that the Court would bring to a close the investigation of the first charge before the second was opened. The wish of Hastings and of his counsel

was the managers should open all the charges, and produce all the evidence for the prosecution, before the defence began. The Lords retired to their own House to consider the question. The Chancellor took the side of Hastings. Lord Loughborough, who was now in opposition, supported the demand of the managers. The division showed which way the inclination of the tribunal leaned. A majority of near three to one decided in favour of the course for which Hastings contended.

When the Court sat again, Mr Fox, assisted by Mr Grey, opened the charge respecting Chait Singh, and several days were spent in reading papers and hearing witnesses. The next article was that relating to the Princesses of Oudh. The conduct of this part of the case was entrusted to Sheridan. The curiosity of the public to hear him was unbounded. His sparkling and highly-finished declamation lasted two days; but the Hall was crowded to suffocation during the whole time. It was said that fifty guineas had been paid for a single ticket. Sheridan, when he concluded, contrived, with a knowledge of stage effect which his father might have envied, to sink back, as if exhausted, into the arms of Burke, who hugged him with the energy of generous admiration.

June was now far advanced. The session could not last much longer; and the progress which had been made in the impeachment was not very satisfactory. There were twenty charges. On two only of these had even the case for the prosecution been heard; and it was now a year since Hastings had been admitted to bail.

The interest taken by the public in the trial was great when the Court began to sit, and rose to the height when Sheridan spoke on the charge relating to the Begums. From that time the excitement went down fast. The spectacle had lost the attraction of novelty. The great displays of rhetoric were over. What was behind was

not of a nature to entice men of letters from their books in the morning, or to tempt ladies who had left the masquerade at two to be out of bed before eight. There remained examinations and cross-examinations. There remained statements of accounts. There remained the reading of papers, filled with words unintelligible to English ears, with lakhs and crores, zamindars and aumils, sunnuds and perwannahs, jaghirs and nuzzurs. There remained bickerings, not always carried on with the best taste or with the best temper, between the managers of the impeachment and the counsel for the defence, particularly between Mr Burke and Mr Law. There remained the endless marches and counter-marches of the Peers between their House and the Hall : for as often as a point of law was to be discussed, their Lordships retired to discuss it apart ; and the consequence was, as a Peer wittily said, that the judges walked and the trial stood still.

T. B. MACAULAY

II

. . . AND THEN GANDHI CAME

We seemed to be helpless in the grip of some all-powerful monster ; our limbs were paralysed, our minds deadened. The peasantry were servile and fear-ridden ; the industrial workers were no better. The middle classes, the intelligentia, who might have been beacon-lights in the enveloping darkness, were themselves submerged in this all-pervading gloom. In some ways their condition was even more pitiful than that of the peasantry. Large numbers of them, *déclassé* intellectuals, cut off from the land and incapable of any kind of manual or technical work, joined the swelling army of the unemployed, and helpless, hopeless, sank ever deeper into the morass. A few successful lawyers or doctors or engineers or clerks made little difference to the mass. The peasant starved, yet centuries of an unequal struggle against his environment had taught him to endure, and even in poverty and starvation he had a certain calm dignity, a feeling of submission to an all-powerful fate. Not so the middle classes, more especially the new petty bourgeoisie, who had no such background. Incompletely developed and frustrated, they did not know where to look, for neither the old nor the new offered them any hope. There was no adjustment to social purpose, no satisfaction of doing something worth while, even though suffering came in its train. Custom-ridden, they were born old, yet they were without the old culture. Modern thought attracted them, but they lacked its inner content, the modern social and scientific consciousness. Some tried to cling tenaciously to the dead forms of the past, seeking relief from present misery in them. But there could be no relief there, for, as Tagore has said, we must not nourish in our being what is dead, for the dead is

death-dealing. Others made themselves pale and ineffectual copies of the West. So, like derelicts, frantically seeking some foothold of security for body and mind and finding none, they floated aimlessly in the murky waters of Indian life.

What could we do ? How could we pull India out of this quagmire of poverty and defeatism which sucked her in ? Not for a few years of excitement and agony and suspense, but for long generations our people had offered their 'blood and toil, tears and sweat'. And this process had eaten its way deep into the body and soul of India, poisoning every aspect of our corporate life, like that fell disease which consumes the tissues of the lungs and kills slowly but inevitably. Sometimes we thought that some swifter and more obvious process, resembling cholera or the bubonic plague, would have been better ; but that was a passing thought, for adventurism leads nowhere, and the quack treatment of deep-seated diseases does not yield results.

And then Gandhi came. He was like a powerful current of fresh air that made us stretch ourselves and take deep breaths ; like a beam of light that pierced the darkness and removed the scales from our eyes ; like a whirlwind that upset many things, but most of all the working of people's minds. He did not descend from the top ; he seemed to emerge from the millions of India, speaking their language and incessantly drawing attention to them and their appalling condition. Get off the backs of these peasants and workers, he told us, all you who live by their exploitation ; get rid of the system that produces this poverty and misery. Political freedom took new shape then and acquired a new content. Much that he said we only partially accepted or sometimes did not accept at all. But all this was secondary. The essence of his teaching was fearlessness and truth, and action allied to these, always keeping the welfare

of the masses in view. The greatest gift for an individual or a nation, so we had been told in our ancient books, was *abhaya* (fearlessness), not merely bodily courage but the absence of fear from the mind. Janaka and Yajnavalkya had said, at the dawn of our history, that it was the function of the leaders of a people to make them fearless. But the dominant impulse in India under British rule was that of fear—pervasive, oppressing, strangling fear; fear of the army, the police, the widespread secret service; fear of the official class; fear of laws meant to suppress and of prison; fear of the landlord's agent; fear of the moneylender; fear of unemployment and starvation, which were always on the threshold. It was against this all-pervading fear that Gandhi's quiet and determined voice was raised: Be not afraid. Was it so simple as all that? Not quite. And yet fear builds its phantoms which are more fearsome than reality itself, and reality, when calmly analysed and its consequences willingly accepted, loses much of its terror.

So, suddenly, as it were, that black pall of fear was lifted from the people's shoulders, not wholly of course, but to an amazing degree. As fear is close companion to falsehood, so truth follows fearlessness. The Indian people did not become much more truthful than they were, nor did they change their essential nature overnight; nevertheless a sea-change was visible as the need for falsehood and furtive behaviour lessened. It was a psychological change, almost as if some expert in psycho-analytical methods had probed deep into the patient's past, found out the origins of his complexes, exposed them to his view, and thus rid him of that burden.

There was that psychological reaction also, a feeling of shame at our long submission to an alien rule that had degraded and humiliated us, and a desire to submit no longer whatever the consequences might be.

We did not grow much more truthful perhaps than we had been previously, but Gandhi was always there as a symbol of uncompromising truth to pull us up and shame us into truth. What is truth ? I do not know for certain, and perhaps our truths are relative and absolute truth is beyond us. Different persons may and do take different views of truth, and each individual is powerfully influenced by his own background, training, and impulses. So also Gandhi. But truth is at least for an individual what he himself feels and knows to be true. According to this definition I do not know of any person who holds to the truth as Gandhi does. That is a dangerous quality in a politician, for he speaks out his mind and even lets the public see its changing phases.

Gandhi influenced millions of people in India in varying degrees ; some changed the whole texture of their lives, others were only partly affected, or the effect wore off ; and yet not quite, for some part of it could not be wholly shaken off. Different people reacted differently and each will give his own answer to this question. Some might well say almost in the words of Alcibiades : ‘ Besides, when we listen to anyone else talking, however eloquent he is, we don’t really care a damn what he says ; but when we listen to you, or to someone else repeating what you’ve said, even if he puts it ever so badly, and never mind whether the person who is listening is man, woman, or child, we’re absolutely staggered and bewitched. And speaking for myself, gentlemen, if I wasn’t afraid you’d tell me I was completely bottled, I’d swear on oath what an extraordinary effect his words have had on me—and still do, if it comes to that. For the moment I hear him speak I am smitten by a kind of sacred rage, worse than any corybant, and my heart jumps into my mouth and the tears start into my eyes—Oh, and not only me, but lots of other men.’

JAWAHARLAL NEHRU

III

THE INDUSTRIAL REVIVAL

If we think of industry not in terms of modern machines and processes and techniques but of manufactured products, then it can be truly said that for twenty centuries or more up to about the eighteenth century, India was industrially the most advanced country in the world, renowned for its fine textiles, its iron and steel and many other products.

In spite of the rudimentary transport facilities of those days, particularly for international commerce, Indian steel found its way to many parts of the world, including Europe. The famous Damascus steel for swords and armour used in the Crusades came from India. In our capital city of Delhi stands today a damascened pillar of solid iron. Twenty-three feet high, weighing six tons, it was made some seventeen hundred years ago. Modern steel-makers still wonder how this pillar was forged and erected with the primitive equipment of those ancient days.

Throughout recorded history India was known for her fine fabrics of cotton and silk, her brocades of silver and gold. There is in fact evidence that her cotton industry goes back at least five thousand years, for Indian muslins were found wrapped around mummies in Egyptian pyramids dating back to 3000 B.C.

In more recent centuries, India had a flourishing ship-building industry, and her ships built of stout teak sailed to distant lands. When the British ruled the country, many of their finest men-of-war were Indian built.

Thus, in countless industries and crafts, the Indian artisan, worker, builder and artist created and prospered and their products found favour and fame both at home and overseas.

And then, as happened with many ancient civilizations, political disintegration and foreign conquest closed the chapter of India's long era of creative achievement. Her eclipse might have been short-lived had not the industrial revolution coincided with the period of her subjection to foreign rule. For, had the great wealth and skill she then still possessed, her vast mineral resources and her centuries-old background of trade and commerce, been harnessed to the development of mechanized industries, there is no reason to doubt that India would have forged ahead along with her sister countries of the West and would be today a powerful industrialized nation and a tower of strength to the free world.

Fate decreed, however, that she should be denied the opportunity for rapid economic development which the power-driven machine brought to other countries. Britain's expanding industries required foreign raw materials and markets. In those days no stigma attached to the exploitation of one nation by another and British colonial power was freely used, until World War I, to promote the interests and welfare of British industries and British labour. In the process, India's old artisan-industries perished and the creation of mechanized industries was discouraged or suppressed.

It is only at the turn of this century that a small beginning was made with the industrialization of the country in the modern sense. Progress however was desperately slow, for, though political awakening and the impact of World War I brought freedom to the country, the old official policies died hard. And so, while other countries went ahead, carried on the crest of the great wave of industrial expansion of the nineteenth and twentieth centuries, Indian industry struggled to keep alive.

When India finally recovered her freedom in 1947, she threw off the last fetters and restrictions which impeded

her economic progress in the past, but at the same time found herself faced with a staggering task. She had first to bind the political, social and economic wounds caused by the partition of the country, rehabilitate millions of refugees rendered destitute by that partition, wage a defensive action in Kashmir and integrate hundreds of semi-dependent states with the rest of the country. Under the leadership of the great triumvirate of Mahatma Gandhi, Jawaharlal Nehru and Vallabhbhai Patel, the initial task, on which the survival of the new State depended, was successfully accomplished in the first two years.

India then turned to build a nation.

The political part was quickly tackled. An elaborate republican Constitution was framed and adopted. It was largely inspired by the American Constitution, although the parliamentary system adopted was based on the British system, and it was quickly sealed by the greatest and most remarkable elections in history when over one hundred million cast their vote.

The economic task was and still is far more difficult. Its magnitude and complexity were enough to appal the stoutest heart as may be gauged from the fact that the average income per head in India is less than three per cent of that in the U.S.A.

India is faced with the problem of rehabilitating some three hundred and sixty million people, 'poor, sensitive and proud', to quote Mr Adlai Stevenson; not a primitive, tribal people, but heirs to a rich and ancient civilization, whom historical events, over which they had no control, have brought to poverty, misery and despair.

Basically, the problem is one of under-production. The task of producing in a few years the extra food and clothing, of building the factories, the dams, the roads, the railways, the houses, the schools and the hospitals, of eliminating a ninety per cent illiteracy, of training workers,

managers and teachers, and of creating the mass of equipment and consumer goods required to provide a decent life for hundreds of millions of people would be formidable enough if India's population was static. But it is anything but static. It is in fact increasing at the rate of nearly five million a year. Although as a percentage of the existing population this increase is no higher than in most other countries and lower than in some, the sheer number involved is overwhelming. In the few minutes I have been addressing you, some two hundred souls have been added to India's population and by the end of the century the population will probably have doubled and reached the staggering figure of seven hundred million.

India is thus engaged in a desperate race between production and population. If means could be found to halt for a generation or two the growth of the population, which, I believe, is not beyond the medical, scientific and administrative possibilities of today, the whole picture would change, and every successive advancement in the output of goods and services would result in a permanent improvement in the standard of living of the people. I hope action will be taken before it is too late, for if we lose that race we shall be overwhelmed.

On the production side of the problem, India is making desperate efforts to increase its productive capacity both in agriculture and in industry. While she must remain for many years primarily an agricultural country, no substantial increase in her food and other crops is possible without mechanization. This itself will require the backing of a well-developed industry capable of supplying the tractors, the combines, the fertilizers, the additional transport and storage facilities, etc.

Thus India's greatest economic need lies in the development of her industries. Most of them are already there on a small- or medium-scale or are in the process of being established. The foundations of large-scale industrializa-

tion therefore already exist, but rapid development is thwarted by the lack of financial resources and of experienced industrial management.

India's present financial resources and her capacity to save for investment in economic development is proportionate to her low productivity. During World War II a group of Indian industrialists and business-men, including myself, calculated that in order to double within fifteen years the standard of living in the country, an investment of over thirty billion dollars was necessary, at the then rate of exchange. Allowing for the depreciation in the value of money and the increase in the population which has taken place since then, the investment required would now be in the neighbourhood of seventy-five billion dollars. This might not seem an exceptionally high figure to a country such as the U.S.A. but to India it is astronomic, for India's national income is only about twenty billion dollars a year, and her capacity to save less than a billion. Thus even if the whole of such savings could be invested in projects of economic development, it would take seventy-five years to achieve the results required in fifteen. In the meantime the population would have more than doubled and the average standard of life would therefore remain no higher than at the beginning. This illustrates the vital importance of finding some means to control the growth of the population until our productivity has caught up with the existing population. It also shows that if India is to succeed in her fearful task, her own internal resources must be supplemented by foreign investments, loans and possibly temporary financial aid to enable her to force the pace in the initial years.

Apart from the shortage of finance, I have mentioned the dearth of experienced management as one of the obstacles in the path of quick progress. No one will appreciate better than yourselves the time it takes to develop the skill, the technical knowledge and the human

qualities required from modern management.

While, by and large, Indian industry is now manned almost wholly by Indian personnel from top to bottom, it has drawn heavily in the past on foreign sources for skilled management personnel, and will have to do so for many years to come as new industries are created.

I have mentioned India's needs in material and human resources. Let me, before closing, refer to methods.

Shortly after World War II India, along with other liberated countries of Asia, found herself at one of the greatest crossroads of history. In view of the immensity and urgency of her problems and needs, should she not take the path of totalitarianism with its glib promise of easy solutions and quick results in preference to the long and difficult path of democracy ? India was fortunate that her destinies were at that time, as they are today, in the hands of men who believe that good ends do not justify evil means, and the road she elected to follow was never in doubt.

At the same time her leaders, as well as Indian business and industry, had to face the fact that the needs of the country and the speed at which such needs had to be met were beyond the financial and managerial resources of free enterprise acting alone. There was no room nor time for doctrinaire arguments regarding the merits and demerits of private enterprise versus state enterprise. Both types of enterprise were needed and must be harnessed to the common purpose. Thus it was that India came to adopt the concept of a mixed economy in which both free enterprise and state enterprise operate side by side and supplement each other's efforts in the development of the country.

While some of us may have doubts about Government enterprise and Government controls, we believe that placed as we are it is a price which must be paid. In India today, perhaps more than in any other country, free en-

terprise is on trial. Many years ago, Mahatma Gandhi appealed to those controlling the wealth and means of production of the nation to consider themselves as trustees for the people. This concept was met with some scepticism at the time. It is finding growing support in India today and by and large free enterprise is coming to accept the need for some measure of self-denial and for the subordination of private interests to those of the people.

It may interest you to know that some sixty years ago J. N. Tata, the founder of the enterprise, over the destinies of which I have the privilege of presiding today, made the principle of trusteeship the basis of his life work. It remains to this day the guiding principle of the firm which he created. In pursuance of that philosophy the personal wealth created by J. N. Tata and his successors has been used to endow great philanthropic trusts which today own about eighty-five per cent of the parent firm. Thus, the bulk of the profits earned from the people, whether workers or consumers, goes back to the people and the cycle is complete.

As you may see from this sketchy outline, India has embarked on a great experiment. If in the years to come it succeeds in building by democratic means a better life for the Indian people, India will have made a significant contribution to the progress and security of the whole free world, but if she fails and if other countries, employing totalitarian methods succeed, the poverty-stricken and unhappy people of the East will judge by the results achieved, rather than by the means employed, and the whole of Asia will be lost to the democratic family of nations.

We live in an exciting age of revolutionary change in which mankind seems to be approaching a great climax. Over the centuries man has witnessed the ebb and flow of many civilizations which, each in turn, have lighted his tortured path.

Western civilization, thanks to its pre-eminence in political and scientific thought and in the magnificent development of its industrial power, has led the world in the last few hundred years but it is unlikely that in the coming centuries any single civilization or group of people will ever again dominate the scene ; for, in our ever-shrinking world which a distinguished friend of mine once described in a pessimistic moment, as little more than an overcrowding and slummy suburb on the outer fringe of a third-rate galaxy—a single world-civilization is in the making to which the peoples of all lands will contribute according to their own genius and historical background. In such universalization of thought, knowledge and action lies the hope that man will come at last to the end of his long quest for peace, happiness and security.

J. R. D. TATA

IV

INDIAN ARCHITECTURE AND RELIGION

IN classical times India was the land of wonders. Four hundred years before the Christian era, a Greek physician, Ctesias of Cnidus, chronicled the extraordinary stories about India which were current at the Persian court. When Alexander the Great's Macedonian troops crossed its boundaries and entered the Punjab, they were amazed at the appearance of the streets in Taxila : these soldiers who had traversed so many countries suddenly felt themselves in another world. And after more than two millenniums, when the face of the earth has been transformed by so many successive revolutions, the traveller landing at Bombay still feels the same shock of surprise : ascetics with strange marks on their foreheads, their nakedness smeared with ashes, charmers with their snakes gliding round them, shouting processions, crowds in religious ecstasy, the childish and grandiose images that obsess the sight, all these bear witness to a different manner of life. Europe and the Near East also have their saints and shrines, pilgrimages and pilgrims, festivals and ceremonies ordained by religion, but in India religion is the framework of daily life, always apparent. Here humanity is stepped in divinity, and by whatever name he worships Him, each man sees God, hears God, is a part of God and lives in God every minute of his life ; even the humblest are not cut off, and the hymns which rise from the rice-fields are often as dignified and as moving as the poets' psalms. A racial characteristic ? But racially India is the most mixed country in the world, and all shades of colouring, from pure white to jet black, are to be found among her three hundred million inhabitants. The effect of the climate ? Nothing can be less uniform than her land-scape : the eternal ice of the Himalayas, the burning

Thar desert, wide river valleys, rugged plateaus ; here cotton, elsewhere wheat, maize and millet, crops as various as the land. Yet there is one common factor of capital importance : the monsoon, that alternating rhythm more violent than the seasons—the relentlessly clear sky which begins to glow and blaze, the sudden rush of heavy clouds, and then the deluge, the unloosing of thunder and lightning, the wild growth of vegetable life, animal life and of all the forces of Nature inimical to man. Man dwarfed by Nature, human life conceived in terms of the drama of the skies, the eternal round of birth and death, the poor human being emptied of its substance and reduced to the ephemeral play of shadows or illusions—these are the common factors of India's genius on which the dazzling structures of her philosophies and religions have been reared.

Until quite recently, the history of India began with the Vedic hymns. Invaders, coming from the common stock from which Europe would receive the Greeks, the Latins, the Celts, the Germanic peoples and the Slavs, were supposed to have passed through Trans-Caspian Asia, leaving the germs of the Iranian peoples, and crossed the Indus. Their gods were still closely associated with natural phenomena, the god of the thunderbolt, of fire, of the moon, etc., though already overladen with ritual conceptions and speculations. Written in very archaic Sanskrit, the hymns constitute the four great collections of Vedas, assigned by most authorities to the period 1500-1000 B.C. Beyond that time, India's past was dark. But the horizon has suddenly receded in the last few years. Systematic excavations since 1921 at Mohenjo-Daro in Sind and at Harappa in the Punjab have shown us a well-developed civilization, rich in works of art, and with a system of writing, which repeated investigations prove to date from about 2800 B.C. In the Vedas there is no mention, no trace of this civilization which flourished on the very

soil that the Vedic Aryans later occupied. At present we have no means of bridging this perplexing gap, while on the other hand there are obvious connexions with Elamite and Sumerian culture, attested by positive facts. The archæologist who directed these sensational excavations, Sir John Marshall, has attempted to discover in the imagery of Mohenjo-Daro the early features of the pantheon which was later to be adopted by Sanskrit India, but his hypothesis awaits verification. Prehistoric India also knew the religion of the megalithic period, and dolmens, menhirs and cromlechs are found throughout the length of the peninsula : the southern group has recently been the subject of a careful investigation. The Vedic period has not, so far as we know, left any religious monuments, and there is little hope of finding any : worship, endlessly complicated and refined, and associated with meticulous ritual, never reached the collective stage. Each of the sacrifices which constituted worship was offered for the exclusive benefit of the sacrificer, the head of a clan or of a family ; each sacrifice was independent, with its own beginning and ending, and could be inserted without further mediation in the web of the greatest sacrifice of all, the life of the universe itself. A religious revolution was necessary before religious monuments could develop.

This revolution took place in India towards the sixth century before Christ, and was part of a vast movement which seems to have shaken the whole world, from China with Confucius and Lao-Tse to Iran with Zoroaster and Greece with Pythagoras. Among the teachers who came to preach in India a gospel of salvation, free from the old liturgical and ritualistic fetters and founded on reason or mystical experience, two succeeded in laying a firm foundation for future growth. Both were born in the central Ganges valley, between the holy river and the sacred Himalayas, at a propitious time when a political revolution was also in progress, a revolution that was to

replace clans by states, and prepare the way for an empire transcending states. Mahavira founded an ascetic brotherhood, governed by a meticulous system of rules, with the fundamental doctrine of the absolute sanctity of life—*ahimsa*, the famous ‘non-violence’ upon which Gandhi is today trying to build a new India. Mahavira taught his disciples a peculiar method of discussion, and a cosmology in which mathematics has a large place. He rejected the idea of a supreme god, but admitted an immense pantheon of petty deities, apparently better off than man but subject to the same vicissitudes without the possibility of that supreme liberation which is reserved for the chosen saints on earth. Out of these elements grew the religion commonly called Jaina, or Jainism, because one of the titles of its founder was ‘The Victorious’ (in Sanskrit, *jina*), given him for his triumph over error and defilement. The Jaina cult still pursues its dim destiny today, after twenty-five centuries: it has spread all over India, but its ancient centres of activity are still maintained in Gujarat, Bengal and the Deccan, and there is some revival in its importance, thanks to a few outstanding Jain saints and scholars. Its adherents come chiefly from the merchant class, the *banias*, and they have never ceased to erect, with unrivalled generosity, admirable monuments of their faith. Excavations at Muttra have revealed the splendour of their temples at the beginning of the Christian era, and Girnar, Palitana and Mount Abu are some of the glories of the religious architecture of India. It is an architecture of immensely rich congregations: precious materials, delicate and careful work with a fine sense of proportion, but lacking the lyrical impulse which animates and transfigures stone.

This lyric note which is absent from Jain architecture was to find full, though almost reluctant, expression in Buddhism. Mahavira’s contemporary, Prince Siddhartha, when he attained the enlightenment that made him a

Buddha (in Sanskrit *buddha* means literally ‘the man who has woken up’), believed that he had found in the purely rational law of causality the origin, nature and cure of the suffering inseparable from existence. Never before had a human soul contemplated this suffering with such pitiful yet unruffled sympathy. Fathers and Doctors of the church might deduce profound metaphysical systems, based on the negation of personality, from his teachings, but the emotional masses worshipped the Master, the apostles and the saints, and then the infinitely multiplied Buddhas as heroes of gentleness, patience and charity, of sublime sacrifice exalted to frenzy. A life of Buddha, surreptitiously introduced to the Christian church, has even given a new saint to the western calendar. The heavenly gods, belittled as in Jainism, were eclipsed by the man who had left his footprints in the soil and his mark in the soul. The places consecrated by his presence were worshipped, his birth-place, the terrace of the Enlightenment, the first preaching, the miracles, his final entry into Nirvana, etc. ; his relics were worshipped. First, following the custom widespread in the East, men raised mounds of earth and stone ; on these were planted symbols, the wheel of the Law, the umbrella of Sovereignty ; the mound was encircled by a railing ; gradually stone replaced impermanent wood, and thus the stupa in its classical form was created, of which Sanchi is a perfect example. The monks were vowed to an itinerant life, but were forced to settle during the three months of the moon. Following their Master’s example, the ‘beggars’ (Sanskrit *bhikshu*) made the best of natural shelters in cave and grottoes ; but the church grew and became wealthy, rest-houses were built for the passing monks and became monasteries. Clearly as a result of their respect for tradition, caves were adapted : they were hollowed out, divided into cells, and decorated. The primitive worship had developed also ; Buddhism had

its liturgy and its collective rites. Corporate life had demanded a monastery, the monastery demanded a chapel, a temple. In the mountain retreats beloved by hermits seeking peace, coolness and water, arose wonderful shrines, at Karli, Kanheri and Ajanta: painting and sculpture, enriched by the passage of Greek artists, were enlisted for the glorification of the Master. In the north-west at Gandhara where Greek princes had ruled for two centuries, a hybrid art had developed in which the canons and conventions of Graeco-Roman studios had been put at the service of Asia. A complete Buddhist imagery was there elaborated which was to spread to China, to the East Indies, and utterly to transform the orthodox doctrine. Progressively invaded by popular beliefs, by magic and sorcery, deformed by the very expansion that carried it amongst peoples whose genius was foreign to India's, Buddhism grew closer to the popular cults of Brahmanical Hinduism. It was on the point of being absorbed into Hinduism when the Muslim conquest destroyed its monasteries, scattered its monks, broke the hierarchical skeleton which kept it together, and swept it from Indian soil.

Hinduism is a convenient name to embrace the innumerable cults which though centred in an infinite diversity of deities, have nevertheless the common characteristics which are at the basis of Brahmanical orthodoxy: theoretical recognition of the Vedas as the absolute authority, a condition which is not very irksome as the Vedic canon has never been officially constituted; the organization of society in castes, a condition evidently inherent in the Indian genius since religions introduced from outside—such as Islam and Christianity—have to struggle against the reversion to caste-ideas within their own churches; the supremacy of the Brahmin, who by right of birth is a 'god on earth'; and respect for the cow, which is sacred and inviolable. With

these reserves, the grossest jungle cults have as much right in the Hindu pantheon as the purely spiritual conceptions of the philosophers. Hinduism has never attempted, desired or been able to organize itself into a regular hierarchy with one supreme head ; it has persisted in living in systematized anarchy, and has derived its strength from this. For thousands of years its spread amongst the aboriginal tribes of Central India has been accomplished by taking into its pantheon, by the simple method of arbitrary assimilation, all the vast company of gods, demons, genii and spirits born of the imaginations of these wild peoples. It is in this way that the great figures of the Hindu religion have grown, Siva, Vishnu, Durga, and the rest : the multiplicity of their titles still reminds us of the great number of divinities which have gone to their making.

The Hindu temple, in spite of the considerable modifications it has received in the course of time, still expresses the individual character of Vedic rites. There is no collective service, and so no nave where the faithful can assemble for corporate prayer. The temple is the personal dwelling-place of the god, who lives there in human fashion, in a statue or symbol. The priests' function is to provide for the needs of the god's daily life : to wake him with music, bathe him, make offerings for his meals, and pleasure him in all sorts of ways, mainly by reciting litanies, hymns and psalms. The priest is also the indispensable intermediary between the god and his worshipper, the sacred and the profane. The worshipper brings his homage and offerings, and the priest renders them acceptable to the god, and in the last resort receives them himself. There is no 'sabbath' in the Hindu religious life, no fixed day of rest recurring at short intervals, but the calendar is full of festivals which are the occasions of fairs and pilgrimages : man's innate love of travel is all the time causing pious tourists to set out on the Indian

roads, more attracted than intimidated by great distances. A pilgrimage which only attracts tens of thousands is negligible: visitors to Prayag (Allahabad), Benares and Puri are numbered in hundreds of thousands; and it is therefore no matter for surprise that temple amenities include huge kitchens and huge bathing-places. The spiritual centre of the temple is the Holy of Holies, where the god dwells in a specially sacred statue: above this shrine rises a many-storeyed tower from which the style of the whole edifice may be deduced. There are three main styles in Indian architecture: the rectangular Nagara in the north; the rounded Vesara, typical of the Andhra district, on the east coast; and octagonal Dravidian in the south. In front of the central shrine stand open, pillared pavilions which house sacred images, the god's car, washing-place and a dancing hall for the too famous 'bayadères'. Dravidian temples are also characterized by massive pyramidal structures over the gateways connecting the successive courtyards that compose the temple precincts. Usually the surfaces of all the buildings are covered with a rich profusion of decorations, often images disconcerting to western aesthetic conceptions where the Indian sculptor has in his own way tried to interpret the superhuman nature of the powers with which religion has peopled his universe.

Alongside these technically exquisite buildings, architecture has piously maintained the tradition of the ancient rockhewn shelters; like Jainism and Buddhism, Hinduism has its underground temples, for example, the Elephanta caves near Bombay, which the earliest European travellers took to be monuments of Alexander and Porus. Sometimes, thanks to better tools, the solid rock has been cut back, and shrines, statues and columns hewn from the living rock, as in the wonderful Kailasa temple at Ellora or the famous *rath* at Mahabalipuram, where the rocks scattered on the seashore have given

birth to a fantastic city of temples and sculptures which take their place amongst the greatest works of art.

Besides her indigenous religions, India has received other great religions from outside : Christianity, implanted from very early times in South India, Judaism which preceded it there, and Zoroastrianism brought to Gujarat by fugitives from Mohammedan persecution in Persia. But none of them gave new treasures or inspiration to Indian architecture. It was left to the strongest adversary of Indian civilization, Islam, to renew and transform Indian art. Iconoclastic Islam, responsible for so much destruction and so many massacres, substituted the spiritual brotherhood of all believers for the hierarchical caste system, and a sober nobility of line and proportion for the wild exuberance of Hindu images. Wherever it has passed, Islam has raised mosques, minarets and mausoleums in token of its faith, but in the religious atmosphere of India the mosques, minarets and mausoleums have attained a dignity and beauty greater than anywhere else. Only the Taj Mahal can compare with the glory of the Parthenon ; Agra and its environs are rivals of Greece. The Great Moguls who gave form to these grandiose and magnificent conceptions did not disdain the help of artists from Europe, and in raising these monuments to their glory they glorified the collective work of the human genius.

SYLVAIN LEVI

LITERATURE AND LIFE

V

THE LEANING TOWER

TAKE away all that the working class has given to English literature and that literature would scarcely suffer ; take away all that the educated class has given, and English literature would scarcely exist. Education must then play a very important part in a writer's work.

That seems so obvious that it is astonishing how little stress has been laid upon the writer's education. Perhaps it is because a writer's education is so much less definite than other educations. Reading, listening, talking, travel, leisure—many different things it seems are mixed together. Life and books must be shaken and taken in the right proportions. A boy brought up alone in a library turns into a bookworm ; brought up alone in the fields, he turns into an earthworm. To breed the kind of butterfly a writer is you must let him sun himself for three or four years at Oxford or Cambridge—so it seems. However it is done, it is there that it is done—there that he is taught his art. And he has to be taught his art. Again, is that strange ? Nobody thinks it strange if you say that a painter has to be taught his art ; or a musician ; or an architect. Equally a writer has to be taught. For the art of writing is at least as difficult as the other arts. And though, perhaps because the education is indefinite, people ignore this education, if you look closely you will see that almost every writer who has practised his art successfully had been taught it. He had been taught it by about eleven years of education—at private schools, public schools, and universities. He sits upon a tower raised above the rest of us ; a tower built first on his parents' station, then on his parents' gold. It is a tower of the utmost importance ; it decides his angle of vision ; it affects his power of communication.

All through the nineteenth century, down to August 1914, that tower was a steady tower. The writer was scarcely conscious either of his high station or of his limited vision. Many of them had sympathy, great sympathy, with other classes ; they wished to help the working class to enjoy the advantages of the tower class ; but they did not wish to destroy the tower, or to descend from it—rather to make it accessible to all. Nor had the model, human life changed essentially since Trollope looked at it, since Hardy looked at it : and Henry James, in 1914, was still looking at it. Also, the tower itself held firm beneath the writer during all the most impressionable years, when he was learning his art, and receiving all those complex influences and instructions that are summed up by the word education. These were conditions that influenced their work profoundly. For when the crash came in 1914 all these young men who were to be the representative writers of their time had their past, their education, safe behind them, safe within them. They had known security ; they had the memory of a peaceful boyhood, the knowledge of a settled civilization. Even though the war cut into their lives, and ended some of them, they wrote, and still write, as if the tower were firm beneath them. In one word, they are aristocrats ; the unconscious inheritors of a great tradition. Put a page of their writing under the magnifying-glass and you will see, far away in the distance, the Greeks, the Romans ; coming nearer, the Elizabethans ; coming nearer still, Dryden, Swift, Voltaire, Jane Austen, Dickens, Henry James. Each, however much he differs individually from the others, is a man of education ; a man who has learnt his art.

From that group let us pass to the next—to the group which began to write about 1925 and, it may be, came to an end as a group in 1939. If you read current literary journalism you will be able to rattle off a string of names

—Day Lewis, Auden, Spender, Isherwood, Louis MacNeice, and so on. They adhere much more closely than the names of their predecessor. But at first sight there seems little difference, in station, in education. Mr Auden in a poem written to Mr Isherwood says : ‘ Behind us we have stucco suburbs and expensive educations.’ They are tower-dwellers like their predecessors, the sons of well-to-do parents, who could afford to send them to public schools and universities. But what a difference in the tower itself, in what they saw from the tower ! When they looked at human life what did they see ? Everywhere change ; everywhere revolution. In Germany, in Russia, in Italy, in Spain, all the old hedges were being rooted up ; all the old towers were being thrown to the ground. Other hedges were being planted ; other towers were being raised. There was communism in one country ; in another fascism. The whole of civilization, of society, was changing. There was, it is true, neither war nor revolution in England itself. All those writers had time to write many books before 1939. But even in England towers that were built of gold and stucco were no longer steady towers. They were leaning towers. The books were written under the influence of change, under the threat of war. That perhaps is why the names adhere so closely ; there was one influence that affected them all and made them, more than their predecessors, into groups. And that influence, let us remember, may well have excluded from that string of names the poets whom posterity will value most highly, either because they could not fall into step, as leaders or as followers, or because the influence was adverse to poetry, and until that influence relaxed, they could not write. But the tendency that makes it possible for us to group the names of these writers together, and gives their work a common likeness, was the tendency of the tower they sat on—the tower of middle-class birth and expensive education—

to lean.

Let us imagine, to bring this home to us, that we are actually upon a leaning tower and note our sensations. Let us see whether they correspond to the tendencies we observe in those poems, plays, and novels. Directly we feel that a tower leans we become acutely conscious that we are upon a tower. All those writers, too, are acutely, tower-conscious ; conscious of their middle-class birth ; of their expensive education. Then when we come to the top of the tower how strange the view looks—not altogether upside-down, but slanting, sidelong. That, too, is characteristic of the leaning-tower writers ; they do not look any class straight in the face ; they look either up, or down, or sidelong. There is no class so settled that they can explore it unconsciously. That perhaps is why they create no characters. Then what do we feel next, raised in imagination on top of the tower ? First, discomfort ; next, self-pity for that discomfort ; which pity soon turns to anger—to anger against the builder, against society, for making us uncomfortable. Those, too, seem to be tendencies of the leaning-tower writers. Discomfort ; pity for themselves ; anger against society. And yet—here is another tendency—how can you altogether abuse a society that is giving you, after all, a very fine view and some sort of security ? You cannot abuse that society whole-heartedly while you continue to profit by that society. And so very naturally you abuse society in the person of some retired admiral or spinster or armament-manufacturer ; and by abusing them hope to escape whipping yourself. The bleat of the scapegoat sounds loud in their work, and the whimper of the schoolboy crying, ‘Please, sir, it was the other fellow, not me’. Anger ; pity ; scapegoat-bleating ; excuse-finding—these are all very natural tendencies ; if we were in their position we should tend to do the same. But we are not in their position ; we have not had eleven years of expensive' education. We have

only been climbing an imaginary tower. We can cease to imagine. We can come down.

But they cannot. They cannot throw away their education ; they cannot throw away their upbringing. Eleven years at school and college have been stamped upon them indelibly. And then, to their credit but to their confusion, the leaning tower not only leant in the 'thirties, but it leant more and more to the left. Do you remember what Mr MacCarthy said about his own group at the university in 1914 ?—'We were not very much interested in politics . . . philosophy was more interesting to us than public causes ?' That shows that his tower leant neither to the right nor to the left. But in 1930 it was impossible—if you were young, sensitive, imaginative—not to be interested in politics ; not to find public causes of much more pressing interest than philosophy. In 1930 young men at college were forced to be aware of what was happening in Russia ; in Germany ; in Italy ; in Spain. They could not go on discussing aesthetic emotions and personal relations. They could not confine their reading to the poets ; they had to read the politicians. They read Marx. They became communists ; they became anti-fascists. The tower they realized was founded upon injustice and tyranny ; it was wrong for a small class to possess an education that other people paid for ; wrong to stand upon the gold that a bourgeois father had made from his bourgeois profession. It was wrong ; yet how could they make it right ? Their education could not be thrown away ; as for their capital—did Dickens, did Tolstoy ever throw away their capital ? Did D. H. Lawrence, a miner's son, continue to live like a miner ? No ; for it is death for a writer to throw away his capital ; to be forced to earn his living in a mine or a factory. And thus, trapped by their education, pinned down by their capital, they remained on top of their leaning tower, and their state of mind as we see it reflected in their poems and plays and

novels is full of discord and bitterness, full of confusion and of compromise.

The influence of the films explains the lack of transition in their work and the violently opposed contrasts. The influence of poets like Mr Yeats and Mr Eliot explains the obscurity. They took over from the elder poets a technique which, after many years of experiment, those poets used skilfully, and used it clumsily and often inappropriately. But we have time only to point to the most obvious influences ; and these can be summed up as Leaning-Tower Influences. If you think of them, that is, as people trapped on a leaning tower from which they cannot descend, much that is puzzling in their work is easier to understand. It explains the violence of their attack upon bourgeois society and also its half-heartedness. They are profiting by a society which they abuse. They are flogging a dead or dying horse because a living horse, if flogged, would kick them off its back. It explains the destructiveness of their work ; and also its emptiness. They can destroy bourgeois society, in part at least ; but what have they put in its place ? How can a writer who has no first-hand experience of a tower-less, of a classless society create that society ? Yet as Mr MacNeice bears witness, they feel compelled to preach, if not by their living, at least by their writing, the creation of a society in which everyone is equal and everyone is free. It explains the pedagogic, the didactic, the loud-speaker strain that dominates their poetry. They must teach ; they must preach. Everything is a duty—even love. Listen to Mr Day Lewis ingeminating love. ‘Mr Spender,’ he says, ‘speaking from the living unit of himself and his friends appeals for the contraction of the social group to a size at which human contact may again be established and demands the destruction of all impediments to love. Listen.’ And we listen to this :

'We have come at last to a country
Where light equal, like shine from snow, strikes all
faces.

Here you may wonder
How it was that works, money, interest, building could
ever hide
The palpable and obvious love of man for man.'

We listen to oratory not to poetry. It is necessary, in order to feel the emotion of those lines, that other people should be listening too. We are in a group, in a class-room as we listen.

Listen now to Wordsworth :

'Love had he found in huts where poor men lie ;
His daily teachers had been woods and rills,
The silence that is in the starry sky,
The sleep that is among the lonely hills.'

We listen to that when we are alone. We remember that in solitude. Is that the difference between politician's poetry and poet's poetry ? We listen to the one in company ; the other when we are alone. But the poet in the 'thirties was forced to be a politician. That explains why the artist in the 'thirties was forced to be a scape-goat. If politics were 'real', the ivory tower was an escape from 'reality'. That explains the curious bastard language in which so much of this leaning-tower prose and poetry is written. It is not the rich speech of the aristocrat : it is not the racy speech of the peasant. It is betwixt and between. The poet is a dweller in two worlds, one dying, the other struggling to be born. And so we come to what is perhaps the most marked tendency of leaning-tower literature—the desire to be whole ; to be human. 'All that I would like to be is human'—that cry rings through their books—the longing to be closer to their kind, to write the common speech of their kind, to share the emotions of their kind, no longer to be isolated and exalted in solitary state upon their tower,

but to be down on the ground with the mass of human kind.

These then, briefly and from a certain angle, are some of the tendencies of the modern writer who is seated upon a leaning tower. No other generation has been exposed to them. It may be that none has had such an appallingly difficult task. Who can wonder if they have been incapable of giving us great poems, great plays, great novels ? They had nothing settled to look at ; nothing peaceful to remember ; nothing certain to come. During all the most impressionable years of their lives they were stung into consciousness—into self-consciousness, into class-consciousness, into the consciousness of things changing, of things falling, of death perhaps about to come. There was no tranquillity in which they could recollect. The inner mind was paralysed, because the surface mind was always hard at work.

Yet if they have lacked the creative power of the poet and the novelist, the power—does it come from a fusion of the two minds, the upper and the under ?—that creates characters that live, poems that we all remember, they have had a power which, if literature continues, may prove to be of great value in the future. They have been great egotists. That, too, was forced upon them by their circumstances. When everything is rocking round one, the only person who remains comparatively stable is oneself. When all faces are changing and obscured, the only face one can see clearly is one's own. So they wrote about themselves—in their plays, in their poems, in their novels. No other ten years can have produced so much autobiography as the ten years between 1930 and 1940. No one, whatever his class or his obscurity, seems to have reached the age of thirty without writing his autobiography. But the leaning-tower writers wrote about themselves honestly, therefore creatively. They told the unpleasant truths, not only the flattering truths. That is

why their autobiography is so much better than their fiction or their poetry. Consider how difficult it is to tell the truth about oneself—the unpleasant truth; to admit that one is petty, vain, mean, frustrated, tortured, unfaithful and unsuccessful. The nineteenth-century writers never told that kind of truth, and that is why so much of the nineteenth-century writing is worthless; why, for all their genius, Dickens and Thackeray seem so often to write about dolls and puppets, not about full-grown men and women; why they are forced to evade the main themes and make do with diversions instead. If you do not tell the truth about yourself you cannot tell it about other people. As the nineteenth century wore on, the writers knew that they were crippling themselves, diminishing their material, falsifying their object. ‘We are condemned,’ Stevenson wrote, ‘to avoid half the life that passes us by. What books Dickens could have written had he been permitted! Think of Thackeray as unfettered as Flaubert or Balzac! What books I might have written myself? But they give us a little box of toys and say to us, “You mustn’t play with anything but these”!’ Stevenson blamed society—bourgeois society was his scapegoat too. Why did he not blame himself? Why did he consent to go on playing with his little box of toys?

The leaning-tower writer has had the courage, at any rate, to throw that little box of toys out of the window. He has had the courage to tell the truth, the unpleasant truth, about himself. That is the first step towards telling the truth about other people. By analysing themselves honestly, with help from Dr Freud, these writers have done a great deal to free us from nineteenth-century suppressions. The writers of the next generation may inherit from them a whole state of mind, a mind no longer crippled, evasive, divided. They may inherit that unconsciousness which as we guessed—it is only a guess—is necessary if writers are to get beneath the surface, and

to write something that people remember when they are alone. For that great gift of unconsciousness the next generation will have to thank the creative and honest egotism of the leaning-tower group.

VIRGINIA WOOLF

VI

THE ARTIST, THE SCIENTIST AND THE PEACE

It is possible—it is at least possible—that no artist and no scientist has ever been able to carry out half his plans to make mankind more cheerful and decent, and possible that this failure has been due less to the illness or laziness of the artist than to the fact that, since history began, all creative talents have been cramped by the insecurity of a world insane with war and tyranny. Yet it has been the artist-scientist himself who has least acknowledged this, who has most tried to hide himself from the age-long conflict for a more reasonable world.

But a strange thing about the present war-time is the number of artist-scientists who *have* realized that their work, no matter how detached from commerce or political ambition it may be, is still dependent on the universal struggle for and against democracy; who have come out of the studio or the laboratory or the theatre to stand with their fellow-workers; who are listening to the question: '*Which side are you on*—isolation or world-control—*which side are you on*?—and who are now answering it.

The old-fashioned type of artist-scientist—the Pasteurs and Whistlers and Walter Paters—felt that their creative work was so superior that they could live in push-lined clouds *above* the human struggle. Here and there a Voltaire or a Dickens or a physician like Vesalius knew that he could have no private light to work by if the whole world elsewhere was in darkness, and he cried '*Let there be universal light!*' even if, in so crying, he lost his respectable reputation or his very life. Then, during the World War I, so timid and retired an etcher of society as Henry James saw that he and his work

were meaningless unless he came out and rejoined the human race, and at last, rather timidly, he did so, and took his stand against Germany.

All along, people like Bernard Shaw and Professor Einstein and Carl Sandburg have seen that their little desks were nothing unless they were joined to all the other little desks in the world, and that not least, but most of all men, the artist, the scientist, must know and somewhat loudly state whether he is for tyranny and cruelty and machine-discipline, or for the people, for all the people.

In this war, among the German writers the renowned Gerhart Hauptmann, once the darling, almost the Frank Sinatra, of all revered German novelists and dramatists, decided on just which side *he* belonged. He belonged with safety and a handsome new farm and obsequiousness to all the goose-stepping lords of the revised Germany. So, even in war-time, he got these luxuries—he lost nothing but his self-respect, and the love of every decent man. That's excellent—he openly took his side—he didn't hide his shamefulness.

But certain Germans and Austrians, like Franz Werfel, Bruno Walter, Stefan Zweig, Freud, Bela Schick, Thomas Mann, Leon Feuchtwanger, decided that new houses and new coats and the hoarse cheering of *schmalz-headed* drill-sergeants weren't enough to make up for the loss of honour, the loss of that quiet satisfaction with your work which is life itself, and they went into exile, gave up every neighbour, every title, even the sweet sound of their own accustomed language, that the world might know on which side they were.

But it's time to stop all that, isn't it? It's cosmic idiocy than an honest and competent man should have to lose even his own tongue and his beloved citizenship because he is too honest and too competent to stand for the botched tyrannies of gangster rulers. The world has

always allowed that sort of thing, since long before the exile of Dante, and it is time, it always has been time, for a new kind of world organization which won't merely yearn for but actually produce security for the competent and honest, and not permit them again to be smashed by incessant and senseless wars. Public murder has become a little too costly—there are people who are really thinking about some sort of a law against it!

Everybody suffers from the usurpation of wars, whether lawyer or garage mechanic or farmer or housewife, but the problem of the scientist or the artist—and consequently the problem of such citizens as want to enjoy the product of the artist and to benefit by the discoveries of the scientist—is twofold. Like everybody else, he must think about that interesting task, making a living, a diversion extremely cramped by war, but his supreme interest has little to do with a mere living. The ordinary workman, whether he is a carpenter or a senator, works best when he scrupulously follows the best standards of the day. When a surgeon takes out an appendix, we don't think more highly of him if he tries the experiment of getting at the appendix through the right elbow. But the creator in the arts and the researcher in the laboratory and the inventor in the workshop have a value exactly as their work is a little different from anything that has been done before. And they can never develop that differentness in a world of insecurity, where they know that anything they do, trivial or important, is judged not by its significance to mankind but by the way in which it tickles a gang of gorillas. Their native land is truth, but no artist or ancient in history has yet dwelt utterly and continuously in that land of truth, because it always has been stormed by the lovers of power.

But it is not important merely for the artists and the scientists themselves to see how their truth has been corrupted, to see where they stand; it is just as important

for their admirers. When the Nazis burned the books in Berlin—or, for that matter, when a certain handsome old city in these United States flops back into medievalism and bans books that do not seem to do much injury to the other cities—then it is the would-be readers of the books that suffer more than the writers; and when the Nazis decide that the music of Mendelssohn is Jewish and not at all the sort of thing that Dr Goebbels would care to write, then it is the lovers of symphonies and not the ghost of the great master that are robbed. If people really want great music, great poetry, great painting, if they really want medical discoveries which will save their babies from death, instead of wanting to live either in a Fascist slaughter-house or a comic-trip of world triviality, then they must give the artists and the scientists a civilization in which they can show what they really can do—as none of them has ever yet had the chance to show.

It isn't that the artist needs softer beds or more food, and as for publicity, in these days of radio and tabloids, he probably gets too much of it! It is a spiritual thing that he needs—an assurance that what he is doing is not futile, a sense that it profits him to produce what will demand of him the labour of years, that will demand a whole lifetime of the most honest devotion, instead of quickly turning out something that will please the fickle vanity of Fascist play-boys whose toys are not only the machine-gun and the rope but pretty propaganda.

But the artist will never do his possibly magnificent best if there is going to be a patched-up world in which the prospects for an unending peace are just a little better than in 1936—if there are to be merely a few more pleasant fictions called treaties and tea-parties called conferences. I am not at all sure but that the most mulish kind of complete isolationism is not preferable to playing at world government, because it is at least honest: you know what and where it is. By the way, I imagine that

this will be the only time during this series of broadcasts when confirmed isolationism is going to have such ardent praise !

In the matter of civilization for the artist or scientist, it has been all or nothing, and usually it has been nothing. However great his talent, if it is all corrupted by the cynicism that spreads in an insecure and dishonest world, then that one germ of despair will flourish until it rots the whole, and the artist or scientist, along with all his followers, will have a shining brilliance, but it will be the autumnal colour of decay.

Consider the science of genetics, the science of birth and the production of better children. So long as that science is devoted to producing more and stronger little Nazis, it is evil, and the more skilful it may become, the more evil it will be. That knowledge will not even begin to be valuable until it is devoted to producing not better little Germans—yes, or better little Americans or Englishmen—but universally, everywhere in the world, regardless of uniforms, better human beings. The scientist, the artist, can ultimately contribute to making a world fit to live in, only *in* a world that is fit to live in—not a city or a state or a nation, but a *world* that is fit to live in. That fact he must know, and must proclaim.

SINCLAIR LEWIS

VII

MORAL VALUES IN LITERATURE

i

ART and literature of the highest type cannot flourish in a world where men are increasingly becoming mechanics and society a racket. The works of our famous literary men are hard and objective, forceful and penetrating. By submitting to scientific modes of thinking, they help to improve our knowledge and sharpen our sensibility. But they fail to provide us with an affirmation of the meaning of life, an enchantment of invisible mystery which is the sanction of value. They suffer from a secret sterility as the seeds of creative life are not deposited in them.

'Even our greatest masters like Bernard Shaw and H. G. Wells do not touch the heights of genius. They have not given us one epic which brings out the full meaning of life, which leaves us throbbing with wild hopes and dazzled by new vistas, not a single drama of a profoundly moving nature which devastates us by its grandeur, burns into us unforgettable visions of men at grips with fate, which shakes, exhausts, cleanses us. It is because they deal with the tumult of the soul, not with its depth. They are predominantly intellectual, not spiritual.'¹

There is a fundamental difference between science and art. The creative artist deals with the solitary side of human life, where each individual works out his unique vision. In regard to scientific inventions, we feel that they could be replaced. That America devised the atom bomb is an accident. Britain, Russia, Germany or even Japan, could have done it. If Columbus had not lived, America would still have been discovered. If Vasco da Gama had not rounded the Cape and opened a sea route to India,

¹ S. Radhakrishnan, *An Idealist View of Life*, p. 161.

some one else would have done it. If Kalidasa had not lived, there would have been no *Abhijnanasakuntala*. Without Shakespeare, there would have been no *Hamlet*. These geniuses took up themes from earlier literature and impregnated them with their own intensity. Master-pieces of literature and miracles of art are irreplaceable in an absolute sense, for they are the products of a unique union of the universe with the personalities of their authors. The union has existed only once and yet has universal authority. There are institutes for scientific research but we cannot have institutes for training poets and prophets. For science is a co-operative enterprise, the work of many minds, while art is the work of solitary genius.

ii

Literature as a form of art along with philosophy and religion has the supreme function of awakening the spirit. Its essential aim is not so much to entertain or instruct as to kindle the spirit in us. Great literature appeals not to reason but to spiritual perception. It is not an argument but a spell, an incantation. It is not the criticism of life but the transforming of it. By gladdening the heart, by healing the tension of the soul, literature strengthens, ennobles and enlarges the life of the spirit. It makes us see with the eye of spirit and fills us with awareness and compassion. Its function is sacramental. Indian thinkers claim that a poem is meant to lead us to the silent ecstasy of spiritual recognition or *ananda*. This delight is akin to the delight of realizing the Supreme Spirit. It is *brahma-nandasahodara*. The apprehension of Brahman, the Supreme Spirit, does not wait upon the evidence of the senses or the power of reasoning. We perceive the truth in a moment of vision, when the self and the not-self, the subject apprehending and the object apprehended, are merged in a creative unity. God exists in reality but is

not a fact and the individual apprehends the real in an act of transcendent perception, *alaukikapratyaksa*, when he stands remote, outside time, lost to the empirical happenings. The reader or the listener has his mind stretched beyond the confines of his logical understanding and exceeds his little being not by the practice of asceticism but by the delight he experiences in the contemplation of the vision conjured up by the artist.

If literature is the treatment of experience through the medium of words, the quality of the literature depends on the kind of experience handled. The naturalists who live on the plane of observation, who strip the flesh of its clothing and expose it in the raw, stimulate the senses and excite the emotions. The rationalists explain to us through endless arguments the laws of the world and 'instruct our ignorance', to use the words of Blake. The Greek Empedocles, the Roman Lucretius and many of our Indian thinkers describe metaphysical ideas in the form of verse. They deal with specialized problems, like nationalization of mines, divorce reform or Marxist society. They communicate to us views, not visions, in tones shrill and exciting but they do not possess the faculty divine. They touch the vital or the intellectual elements in our nature as their own experience, which they interpret through the medium of words on the plane of either observation or ratiocination. They both live in a world of fragments. When we write from the vital or the intellectual level, our work will not have the power and the sovereign expression of our inmost self. We have thus different types of literature, a literature of sensations, a literature of ideas and a literature of spirit, of power, reflecting the different contents of our experience. The literature of power is written for the body, the mind and the soul. In it the distinction between the Dionysian, which stresses unbridled emotionalism, and the Apollonian, which stands for pure intellectualism, is transcend-

ed. Its aim is the integration of self, its reconciliation with the world, natural and social.

iii

No literature can achieve its true aim of expanding our consciousness, of increasing our awareness, if the author has not himself risen to the plane of spirit. If he has not the creative fire, he cannot kindle the fire in others. He must not only observe and argue but also see. The gift of right vision comes to those who have effected a profound change in their inner being, into whose nature has entered a spirit, calm, equal and ineffable. Human consciousness cannot act in its purity until it is released from the domination of desires and the separative ego. The artist must surrender his will, subdue his emotions, draw in all his thoughts and concentrate on the Essential Reality. Only then can he achieve maturity of mind and ripeness of wisdom. He who is not a seer cannot produce great literature, *Nanrsih kurute kavyam*. The intense concentration of the mind is essential, not only for saintliness but for artistic creation. The impulse for great literature comes from a higher consciousness. The possession of our mind by a vaster spirit is the phenomenon of inspiration. It is intensity of living, concentration on the object, which makes ideas take wings and embody themselves in rhythms or colours. If a poet is lacking in intensity of vision, in inward grace, in chastity of spirit, he fails as a poet. Creation implies suffering for the creator. We who come after reap the joy which He won for us by His suffering. *Tapas* is not the passive suffering, however tragic it may be, the suffering of poverty, of disease and of degradation, of the injustice of fate, but the active suffering born of love, the burning passion to raise the lot of sorrowing humanity. The greatest literary artists are dedicated spirits, priests of the vocation, who see themselves complete within them-

selves. By submitting their whole being to a purpose beyond itself, they attain integrity.

Man rises to godhead through *tapas*. Before creation sets in, there is *tapas* or austerity. The world is built by the hands of numberless masters of compassion, raised by their sufferings and cemented by their blood. *Santo bhumim tapasa dharayanti*. It is these *tapasvins* that protect us from the greater misery and deeper sorrow. Valmiki, our first great poet, is a *tapasvin*, a seer, and he from whom he derives illumination is the prince of seers.¹

S. RADHAKRISHNAN

¹ *tapas svadhyaya niratam tapasvi vagvidam varam
Naradam paripapraccha Valmikir munipungavam*

(Valmiki, the *tapasvin*, put a comprehensive question to Narada, who is devoted to austerity and study, who is the foremost among the knowers of speech and a prince among silent sages.)

CURRENT PROBLEMS

VIII

WORLD RESOURCES AND WORLD POPULATION

I TOOK part lately in a debate in the House of Lords on a subject which I believe to be of great importance and even urgency for the future well-being of mankind : the very rapid and indeed increasingly rapid growth of the population of the world. As one newspaper put it, 'An extra 100,000 persons turn out for dinner every day'. These extra mouths may be a danger for the future comparable to the danger of the hydrogen bomb.

The Prime Minister speaking of the menace of the hydrogen bomb the other day said : 'There is no doubt that if the human race are to have their dearest wish and be free from the dread of mass destruction, they could have, as an alternative, the swiftest expansion of material well-being that has ever been within their reach. Those majestic possibilities ought to gleam before the eyes of the toilers in every land.' I think, personally, that for once the Prime Minister was wrong. Like many other people, I do not think that he realized the almost fantastic difficulty of providing food for 30,000,000 new mouths every year. Many people think that the result may be calamitous.

I want to try to make this clear by explaining what has happened in Britain and by comparing it with what is now beginning to happen in India. Up to 200 years ago our population had increased quite slowly. Then we had two scientific revolutions : the Industrial Revolution, which has made us five times as rich as we had been, and the health revolution which has made the average Briton live for seventy years—more than twice as long as our ancestors did 200 years ago. These two revolutions have given us health and wealth. As they have developed, women have stopped having six children each ; they now

have an average of two and a half. The control of death which has been so successful is now matched by the control of birth. In 200 years we have passed from poverty, large families, and many early deaths, to small, healthy, long-lived families, and during this period our population has increased five times. There are five times as many of us, we are each of us five times as rich, and each of us lives more than twice as long. Indeed, we are living through what may be called a Golden Age such as human beings have never known before. A main reason for our wealth is that we are rapidly and, indeed, recklessly using up the accumulated natural resources of the whole world. May I give two instances: since World War I the quantity of oil and coal used in the U.S.A. exceeded the total used throughout the entire world in all history before 1914. Nature took perhaps 300,000,000 years to build up the world's resources of coal and oil. We in our Golden Age are likely to use them up in 300 years. Each year we are consuming what nature took 1,000,000 years to build. And when these resources are gone—our Golden Age may end. Though I must admit that several peers in the recent debate were optimistic that science would solve all our troubles for ever.

When we turn to the under-developed countries the story is a very different one. When I say under-developed, I mean a country which has not gone through the two scientific revolutions which have given us health and wealth. In other ways—in wisdom, in religion, in culture—they may be ahead of us. India is perhaps the best example to take among the under-developed countries. She has an ancient civilization but from the point of view of health and wealth she is about where we were 200 years ago. She is just starting on her two scientific revolutions. And unfortunately she is starting with grave disadvantages. First, she is very poor. Her standard of living is a good deal lower than ours was 200 years ago.

Secondly, her population is immense ; fifty times what ours was in 1750. Thirdly, her land is already over-crowded : there is little additional land which she can bring under cultivation. And, fourthly, there are no empty lands in the world corresponding to North America and Australia which absorbed millions of emigrants from Britain, and provided us with all the food we needed to buy.

Curiously enough, India's problem is made still more difficult by the fact that it is much easier to control death today than it was 200 years ago. In particular, recent scientific inventions have produced wonderful results in the tropics.

An outstanding example has been the abolition of malaria by the use of D.D.T. As a result, the population in India is increasing by no less than 5,000,000 every year. Indeed, the population has increased so much during the last thirty years that the production of food has not been able to keep pace with it. Millions of Indians were underfed thirty years ago ; it is a tragic fact that many more millions are hungry today. That is no doubt why India produced its first Five-Year Plan two years ago to raise the standard of living by developing industry and agriculture. All five-year plans have that aim. But unlike any other country, the Indian plan goes on to say that the recent increase in the population has brought to the forefront the urgency of family-planning and of population-control. The Government of India has voted £ 500,000 to begin a nation-wide campaign to help the women of India in the 500,000 villages to plan their families.

Further valuable information is given by a high Indian Government official, the Registrar-General, who has had the courage and foresight to publish an estimate of the probable increase in the population of India in the next thirty years and of the possibility of providing them with

the necessary food. He estimates that, without family-planning, the population, which is now 360,000,000 will have increased to 520,000,000. After a full study of all the many ways of increasing the food supplies he concludes that during the next thirty years India cannot feed at an acceptable level more than 450,000,000 people. If this number is exceeded he warns that the food supply might break down : he even talks of the possibility of catastrophe with widespread famine and epidemic diseases. He concludes that the twin policies of economic development and the reduction of births must be simultaneously pursued. If they are given top priority it should be possible to prevent the population of India ever exceeding 450,000,000. And in that case an improving standard of living should be obtained.

The Indian Government is the first to recognize officially that rising standards of living and of health depend on population control. Mr Nehru is certainly the first Prime Minister in the world who has said : 'We should be a much more advanced nation today if our population was about half what it is.' The Indian Government has shown wisdom and courage in tackling the almost overwhelming problem of raising the standards of food and life for its immense population. At best, India's Golden Age is several generations away. Let us from the vantage point of our own Golden Age, and particularly our highly developed science and technology, give them and the other under-developed countries of the world all the help that lies in our power.

LORD SIMON OF WYTHENSHAWE

IX

THE DOUBLE CRISIS

THE human race is passing through a time of crisis, and that crisis exists, so to speak, on two levels—an upper level of political and economic crisis and a lower level of demographic and ecological crisis. That which is discussed at international conferences and in the newspapers is the upper-level crisis—the crisis whose immediate causes are the economic breakdown due to the war and the struggle for power between national groups possessing, or about to possess, the means of mass extermination. Of the low-level crisis, the crisis in population and world resources, hardly anything is heard in the press, on the radio or at the more important international conferences . . . Yet the low-level crisis is at least as serious as the crisis in the political and economic field. Moreover, the problems on the upper level cannot be solved without reference to the problems that are shaping up in the cosmic and biological basement. If it is ignored, the low-level crisis is bound to exacerbate the crisis on the political and economic levels. At the same time, a concentration of attention and energy on power-politics and power-economics will make a solution of the low-level problems not merely difficult, but impossible. In what follows I propose to discuss certain aspects of the low-level crisis and to point out how the obscure happenings in the basement have affected and are likely to go on affecting the lives of private individuals, the policies of statesmen and the conduct of nations.

It has been fashionable for some time past to talk about ‘poverty in the midst of plenty’. The phrase implies that the planet possesses abundant resources to feed, clothe, house and provide amenities for its existing population and for any immediately foreseeable increase in that

population, and that the present miseries of the human race are due entirely to faulty methods of production and, above all, of distribution. Given currency reform, socialism, communism, unrestricted capitalism, distributism, or whatever the favourite remedy may be, humanity, like the prince and princess in the fairy stories, will be able to live happily ever after. Want and hunger will be transformed into abundance and the whole earth will become one vast Land of Cockayne.

Such are the miracles to be achieved by political and economic planning. But when we pass from these high-level considerations to a study of what is going on at the biological and ecological levels, our optimism is apt to seem a little premature, to say the least of it. Instead of poverty in the midst of plenty, we find that there is poverty in the midst of poverty. World resources are inadequate to world population. At the present time, our planet supports a little less than two and a quarter billions of human beings, and the area of food-producing land is in the neighbourhood of four billion acres. It has been calculated that two and a half acres of land are needed to provide a human being with a diet which nutritionists would regard as adequate. Thus, even if all the available productive land were good—and much of it is of very poor quality—the existing population could not be assured of an adequate diet. Actually, in order to guarantee an adequate diet for all of the world's two and a quarter billions of men, women and children, the present food supply would have to be doubled. But this cannot be accomplished overnight. In the words of Dr Thomas Parran, the U.S. Surgeon-General, 'the greatest possible increase in food production will not for decades be enough to meet the minimum adequate diet.' And meanwhile world population is rising. It is rising at the rate of about two hundred millions every ten years. This means that, by the time the food supply is doubled,

there will be, not two and a quarter billions of mouths to feed, but well over three billions. In spite of all that may have been achieved in the interval, malnutrition will be just as serious and just as widespread as it is today.

Moreover, while population goes up, the fertility of the soil declines. ‘Modern man,’ writes Ward Shepard in his *Food or Famine*, ‘has perfected two devices, either of which is capable of annihilating civilization. One is atomic war, the other is world soil-erosion. Of the two, soil-erosion is the more insidiously destructive. War disrupts or destroys the social environment, which is the matrix of civilization. Soil-erosion destroys the natural environment, which is its foundation.’ In other words, atomic war may destroy one particular civilization—the Western-Industrial variety, for example; soil-erosion, if unchecked, can put an end to the possibility of any civilization whatsoever.

The catalogue of man’s crimes against his environment is long and dismal. In Africa the Sahara is advancing; the habitable mountains and table-lands of the equator are rapidly eroding; the southern plains are over-grazed dust-bowls. Central America is in process of becoming a desert. Much of South America is being washed down unterraced mountain slopes into the sea. With every drought vast areas of Australia and the United States of America turn into wind-blown dust. In Asia it is the same lamentable story. As population goes up, the fertility of the ever more ruthlessly exploited land goes down. There is spreading and deepening human poverty in the midst of spreading and deepening natural poverty.

In certain respects the European picture is decidedly brighter. Thanks to sound agricultural practices and a climate that is without extremes, the farmers of Western Europe can produce good crops and go on producing them, without, in the process, ruining their land. But

however good these crops may be, they are insufficient to provide the present population of the territory with its minimum food requirements. In relation to the local resources Western Europe is overpopulated. . . . According to some competent authorities, even Russia is overpopulated. The short northern summer severely limits the size of the crops, and the long northern winter severely limits the number of animals that can be kept alive on stored-up fodder. And over the greater part of the country precipitation is low and irregular. In these circumstances even a low population density may be excessive. And the birth-rate is high, modern hygiene and medicine are prolonging the expectation of life, numbers are rapidly increasing. But meanwhile new methods of arctic agriculture have been devised ; ambitious schemes of irrigating Central Asia are under study ; and having abolished the laws of 'reactionary genetics', Lysenko promises a revolution in plant-breeding. Will the tundras, the deserts and ideologically correct science be able to feed and clothe the two hundred and fifty millions who will inhabit the U.S.S.R. in 1970 ? Let us hope so ; for the alternative is a crusade for more *lebensraum*.

Since 1800 Western Europe has more than trebled its population. This huge increase was made possible by elementary hygiene and the exploitation of the virgin territories of the New World. Today hygiene and medicine are keeping more Europeans alive ; but the New World has a large and rapidly increasing population of its own and, after more than a century of abuse, not a little of its soil has lost or is in process of losing its fertility. In a good year there is still a very large exportable surplus. But not every season is a good season. During the lean years of the thirties, the United States of America had very little to sell abroad. . . .

Up to the present, Western Europe has contrived to pay for the food imported from the New World by selling

manufactured articles and technical services. With the industrialization of the New World, these are becoming less and less acceptable. Europe will find it increasingly difficult to pay for supplies which, as the population pressure on the New World's eroded soils increases, are bound to diminish. And this will happen at a time when Asia, newly industrialized and overcrowded as never before, will be desperately competing for whatever surpluses of food the New World can still make available to the Old.

Food is a renewable commodity. If the soil is not abused, this year's harvest will be succeeded next year by another harvest no less bountiful. But the vein of tin or copper, which was the source of this year's supply of ore, will not be renewed in years to come. When the lode has been worked out, the miner must move on to another deposit of the mineral. And if he can find no other deposits ? *Après moi le déluge.* Industrialism is the systematic exploitation of wasting assets. In all too many cases, the thing we call progress is merely an acceleration in the rate of that exploitation. Such prosperity as we have known up to the present is the consequence of rapidly spending the planet's irreplaceable capital.

How long can the accelerating dissipation of capital go on ? How soon will the wasting assets of the world be exhausted ? We do not know. All that is certain is that the supplies of many hitherto essential commodities are limited and that, in many places, very rich and easily available deposits of those commodities have been, or are in process of being, worked out. And this is happening at a time when a rising population with steadily improving methods of production is calling for ever-increasing quantities of consumer goods—in other words, is making ever-heavier demands on the limited reserves of our planetary capital.

Up to this point, I have dealt with world population as a single undifferentiated whole. The problem thus posed is that of increasing pressure upon diminishing resources. But this basic problem of our time is deepened and complicated by the fact that rates of increase are not uniform throughout the world's population. Differential birth-rates as between the various peoples of the earth, and as between classes within a people, are rapidly engendering a host of new problems.

In Western Europe and North America, the over-all birth-rate has sharply declined in the course of the last fifty or sixty years. Because of the lowered death-rate and the relatively large numbers of persons within the reproductive age-groups, this decline in the birth-rate has not yet manifested itself in a net decline of population. But the onset of such a decline is close at hand. For example, by 1970 the population of France and Great Britain will have declined by about four millions apiece, and the number of persons over sixty-five will be approximately equal to the number of those under fifteen. Similar declines are due, at a slightly later date, in the other countries of Western Europe and in the New World (except South America). Meanwhile, in spite of much higher death-rates, the population of Eastern Europe and of Asia is destined to go on increasing. By the end of the present century, Asia alone will have a population of about two billions. And in 1970, when Western Europe will have some nine million fewer inhabitants than it possesses today, Russia will have gained upwards of fifty millions. . . .

We have now to consider the ways in which these untoward biological happenings have affected, or are likely in the future to affect, our behaviour on the levels of domestic and international politics.

The nature of the low-level crisis is such that it must necessarily take a very long time to remove its under-

lying causes. The best we can do is to palliate the more dangerous symptoms and to draw up plans for a genuinely etiological treatment.

ALDOUS HUXLEY

X

THE DILEMMA OF THE SCIENTIST

NEARLY nine years ago, on a warm autumn evening in 1945, I was driving over the mountains of southern Japan to the city of Nagasaki. I thought I was still in open country when all at once I realized that I was already crossing what had been the city. The shadows which flickered past me in the dusk were not rocks and trees : they were crushed buildings, the bare and skewed ribs of factories, and two crumpled gasometers.

The scale of the damage at Nagasaki drained the blood from my heart then, and does so now when I speak of it. For three miles my road lay through a desert which man had made in a second. Now, nine years later, the hydrogen bomb is ready to dwarf this scale, and to turn each mile of destruction into ten miles. And citizens and scientists stare at one another and ask : 'How did we blunder into this nightmare ?'

I put this first as a question of history, because the history of this is known to few people. The fission of uranium was discovered by two German scientists a year before the war. Within a few months, it was reported that Germany had forbidden the export of uranium from the mines of Czechoslovakia which she had just annexed. Scientists on the Continent, in England and America, asked themselves whether the secret weapon on which the Germans were said to be working was an atomic bomb. If the fission of uranium could be used explosively (and this already seemed possible in 1939) it might in theory make an explosion a million times larger than hitherto. The monopoly of such an atomic bomb would give Hitler instant victory, and make him master of Europe and the world. 'The scientists knew the scale of what they feared very well : they feared first

desolation and then slavery. With heavy hearts, they told Albert Einstein what they knew of atomic fission. Einstein had been a pacifist all his life, and he did not easily put his conscience on one side. But it seemed clear to him that no scientist was free to keep this knowledge himself. He felt that no one could decide whether a nation should or should not use atomic bombs, except the nation itself; the choice must be offered to the nation, and made by those whom the nation has elected to act for it. On 2 August 1939, a month before Hitler invaded Poland, Einstein wrote to President Roosevelt to tell him that he thought an atomic bomb might be made, and he feared that the Germans were trying to make one.

This is how it came about that, later in the war, scientists worked together in England, in Canada and America, to make the atomic bomb. They hated war no less than the layman does—no less than the soldier does; they, too, had wrestled with their consciences; and they had decided that their duty was to let the nation use their skill, just as it uses the skill of the soldier or the expert in camouflage. The atomic scientists believed that they were in a race against Germany whose outcome might decide the war even in its last weeks. We know now that the race was almost a walk-over. The Germans were indeed trying to make an atomic explosion, and they thought that they were ahead of the allies. But by our standards, what they had done was pitiful; they had not made a pile that worked, and they believed that the fast chain-reaction of an atomic bomb was impossible. The Nazis had made fundamental science a poor relation, and put it under second-rate party men with splendid titles. And, more deeply, the Nazis had sapped the pith and power of research, the quizzical eye and the questioning mind, the urge to find the facts for oneself. There were not enough unconventional ideas in the German atomic projects, and when the younger men did put up

some, their leaders always knew better.

In short, the Germans failed; it was the allies who tested the first atomic bomb in July 1945. By this time Germany was defeated and Hitler was dead. The atomic scientists who had made the bomb in America were therefore shocked and distressed to hear that it was still intended to use it, against the Japanese. They wrote a round robin to President Truman in which they pleaded against this decision. This is not simply a bigger bomb, they said: it changes the very scale of war and of all power; and it should be demonstrated to the world, not on men and women, but in some desert place. However, the protest of the scientists was ignored; and Hiroshima and Nagasaki were made desert places.

There were, I know, scientists who hoped after this that the atomic bomb would make war unthinkable. There are scientists today, and soldiers and statesmen too, who hope that the hydrogen bomb will bring the nations to their senses. I am afraid that they are mistaken. Wars are neither made nor unmade by weapons; it is the other way about, the weapons grow out of the wars. And by the same token, if there is war, then the weapons are used; alas, I have no faith in making the desperate business of war sporting by forbidding the more unpleasant forms of slaughter. The Lateran Council outlawed the cross-bow in 1139 because it was inhuman, and poets and scientists foresaw the danger of the flying balloon in 1784; but war has not become more kindly for their good sense. The evil root is war itself.

I am, therefore, out of sympathy with the cry that the scientist ought not to discover formidable sources of power, or at least should not disclose them to his frail and destructive fellowmen. As a piece of advice, this is unpractical, and as a policy it is a makeshift. It is in fact humbug—a pious wish that someone else should make the world a better place for us. Under any democratic

system of government the responsibility for the world is yours and mine, and we do not change the world by what we wish but by how we act. If we do not want the nations to make hydrogen bombs or plan war, then it is our business to say so to those whom we elect to act for us ; and to say it until they listen. And it is not enough to appeal to one side, as the 'Peace Campaigns' do which try to put pressure on every government except the Soviet Government. In fact I believe that not even a totalitarian government, despite its stony face, is immune to public opinion, to the voice in the crowd, to the arguments among friends. But there is a limit to the effectiveness of public pressure in totalitarian countries, and we must recognize this when we ask what any democratic society ought to do. Yet we cannot evade the choice which the community must make, between a bomb or no bomb, between planning for war or peace, by asking the scientists to hide the choice from us. The community of voters decides that there shall be research for war, and employs the scientists to do it. Having given him that hangman's job, it must not ask him to be judge as well, to decide single-handed what is or is not good for the community to know. The scientist in this work is the servant of the nation, and he must not dictate to it, even about his own discoveries. If he does so, he betrays his trust, just as much as Dr Klaus Fuchs did when he decided that he knew best who should share the secrets of the atomic bomb.

Then what should the scientist do who abhors the miserable misuse of science to conspire death, and who wishes that he had never had a hand in computing an aiming error ? I can only speak for the scientist in a free society. The scientist in a totalitarian system faces perhaps the same crisis of conscience, but if his government allows him no alternative, he may indeed—who knows—act out his dissent in the sabotage of which he is often accused

in public trials behind the Iron Curtain. The disaster of state intolerance, anywhere in the world, is that it saps both sides of the moral contract, the individual's as well as the state's. But the scientist in society has no right to dictate to society ; and—this is the heart of the matter—in return society must not dictate his life to him. He must be free to follow his conscience, as any citizen should be free, in peace or in war. Like every man and woman, the scientist has a duty to himself, which demands that his work shall not only be useful, but shall conform to his sense of human fulfilment and dignity. If this prompts him to reject research for war, or atomic physics, or science itself, he must be free and able to find other work.

Above all, the dissenting scientist must be free to give his reasons and to speak his mind. This is his true responsibility in the blundering, warring world: not to impose his will on his fellows, but to help them to find their own wills. We live in a time when science penetrates every public issue, from a city plan to the fall in the death-rate, from a fuel crisis to cigarette smoking or margarine. If the voter leaves these issues to the specialists, democracy will sink to what it became in Athens, when a minority of educated men governed 300,000 slaves. The faith of our democracy is that at bottom every man has the ability to form a judgment on every issue ; and therefore the life of democracy hangs by his willingness to educate his judgement. For example, voters here have learnt a great deal of economics and of history ; but in science, they and the men they elect are steeped in prejudice. I believe that nations can choose wisely, and democracy can prove its power, if scientists are willing to become teachers to them. The chemist, the biologist, the mathematician can speak at first-hand of the roots and the range of modern discoveries, their possible results for good or ill, the choice they offer and

the meaning they give to our lives. And, more profoundly, from the statistician to the secret physicist; each scientist has a method to teach, by which the voter will measure promise against achievement, and ask if the world has any business to fall so far short of what it might be.

Today the man who has worked on the issues of life and death, a guided missile or the hydrogen bomb, is seldom free to speak as he would like. I think his silence, in which secrecy and tact combine, is a loss to the community. And if in time he comes to find silence natural, the habit will dry up science itself, so that at last it fails its own nation. There is no conforming or totalitarian science. The dropping of the agricultural policies of Professor Lysenko is evidence of this as much as the poverty of German atomic research during the war. You cannot make a discovery to any pattern but its own, which in the end is the personality of the men who make it. And if you want good science, if you want minds from whom everyone has something to learn, then you must put up with men as awkward and heretical as Newton was. The dilemma of militarism in science is not confined to a few men who have their livings to make, or whom a board of loyalty clears but sacks. Like every moral problem, it challenges the future of the nation in a most practical way. Can we have secrecy and an educated democracy as well? Can we have a state-guarded science in which there will still be dissent? And if we give up dissent, how long before science becomes a hocus-pocus like alchemy, which has nothing to contribute either to war or to peace?

J. BRONOWSKI

SHORT STORIES

XI

THE TRUTH ABOUT PYECRAFT

HE sits not a dozen yards away. If I glance over my shoulder I can see him. And if I catch his eye—and usually I catch his eye—it meets me with an expression—

It is mainly an imploring look—and yet with suspicion in it.

Confound his suspicion ! If I wanted to tell on him I should have told long ago. I don't tell and I don't tell, and he ought to feel at his ease. As if anything so gross and fat as he could feel at ease ! Who would believe me if I did tell ?

Poor old Pyecraft ! Great, uneasy jelly of substance ! The fattest clubman in London.

He sits at one of the little club tables in the huge bay by the fire, stuffing. What is he stuffing ? I glance judiciously and catch him biting at a round of hot buttered tea-cake, with his eyes on me. Confound him ! —with his eyes on me !

That settles it, Pyecraft ! Since you *will* be abject, since you *will* behave as though I was not a man of honour, here, right under your embedded eyes, I write the thing down—the plain truth about Pyecraft. The man I helped, the man I shielded, and who has requited me by making my club unendurable, absolutely unendurable, with his liquid appeal, with the perpetual ‘don't tell’ of his looks.

And, besides, why does he keep on eternally eating ?

Well, here goes for the truth, the whole truth, and nothing but the truth !

Pyecraft—. I made the acquaintance of Pyecraft in this very smoking-room. I was a young, nervous new member, and he saw it. I was sitting all alone, wishing I knew more of the members, and suddenly he came, a

great rolling front of chins and abdomina, toward me, and grunted and sat down in a chair close by me and wheezed for a space with a match and lit a cigar, and then addressed me. I forget what he said—something about the matches not lighting properly, and afterwards as he talked he kept stopping the waiters one by one as they went by, and telling them about the matches in that thin, flutey voice he has. But anyhow, it was in some such way we began our talking.

He talked about various things and came round to games. And thence to my figure and complexion. ‘*You* ought to be a good cricketer,’ he said. I suppose I am slender, slender to what some people would call lean, and I suppose I am rather dark, still—I am not ashamed of having a Hindu great-grandmother, but, for all that, I don’t want casual strangers to see through me at a glance to *her*. So that I was set against Pyecraft from the beginning.

But he only talked about me in order to get to himself.

‘I expect,’ he said, ‘you take no more exercise than I do, and probably you eat no less.’ (Like all excessively obese people he fancied he ate nothing.) ‘Yet’—and he smiled an oblique smile—‘we differ.’

And then he began to talk about his fatness and his fatness; all he did for his fatness and all he was going to do for his fatness; what people had advised him to do for his fatness and what he had heard of people doing for fatness similar to his.

‘*A priori*,’ he said, ‘one would think a question of nutrition could be answered by dietary and a question of assimilation by drugs.’ It was stifling. It was dumpy talk. It made me feel swelled to hear him.

One stands that sort of thing once in a way at a club, but a time came when I fancied I was standing too much. He took to me altogether too conspicuously. I could never go into the smoking-room but he would come

wallowing towards me, and sometimes he came and gormandized round and about me while I had my lunch. He seemed at times almost to be clinging to me. He was a bore, but not so fearful a bore as to be limited to me ; and from the first there was something in his manner—almost as though he knew, almost as though he penetrated to the fact that I *might*—that there was a remote, exceptional chance in me that no one else presented.

'I'd give anything to get it down,' he would say—'anything,' and peer at me over his vast cheeks and pant.

Poor old Pyecraft ! He has just gonged, no doubt to order another buttered tea-cake !

He came to the actual thing one day. 'Our *Pharmacopœia*,' he said, 'our Western *Pharmacopœia* is anything but the last word of medical science. In the East, I've been told, it is poss—'

He stopped and stared at me. It was like being at an aquarium.

I was quite suddenly angry with him. 'Look here,' I said, 'who told you about my great-grandmother's recipes ? '

'Well,' he fenced.

'Every time we've met for a week,' I said—'and we've met pretty often—you've given me a broad hint or so about that little secret of mine.'

'Well,' he said, 'now the cat's out of the bag, I'll admit, yes, it is so. I had it—'

'From Pattison ? '

'Indirectly,' he said, which I believe was lying, 'yes.'

'Pattison,' I said, 'took that stuff at his own risk.'

He pursed his mouth and bowed.

'My great-grandmother's recipes,' I said, 'are queer things to handle. My father was near making me promise—'

'He didn't ? '

'Ah ! . . . But do you think ?—Suppose—suppose there

did happen to be one—'

'The things are curious documents,' I said. 'Even the smell of 'em . . . No !'

But after going so far Pyecraft was resolved I should go farther. I was always a little afraid if I tried his patience too much he would fall on me suddenly and smother me. I own I was weak. But I was also annoyed with Pyecraft. I had got to that state of feeling for him that disposed me to say, 'Well, take the risk !' The little affair of Pattison to which I have alluded was a different matter altogether. What it was doesn't concern us now, but I knew, anyhow, that the particular recipe I used then was safe. The rest I didn't know so much about, and, on the whole, I was inclined to doubt their safety pretty completely.

Yet even if Pyecraft got poisoned—

I must confess the poisoning of Pyecraft struck me as an immense undertaking.

That evening I took the queer, odd-scented sandalwood box out of my safe and turned the rustling skins over. The gentleman who wrote the recipes for my great-grandmother evidently had a weakness for skins of a miscellaneous origin, and his handwriting was cramped to the last degree. Some of the things are quite unreadable to me—though my family, with its Indian Civil Service associations, has kept up a knowledge of Hindustani from generation to generation—and none are absolutely plain sailing. But I found the one that I knew was there soon enough, and sat on the floor by my safe for some time looking at it.

'Look here,' said I to Pyecraft next day, and snatched the slip away from his eager grasp.

'So far as I can make it out, this is a recipe for Loss of Weight. ('Ah !' said Pyecraft) I'm not absolutely sure, but I think it's that. And if you take my advice you'll leave it alone. Because, you know—I blacken my

blood in your interest, Pyecraft—my ancestors on that side were, so far as I can gather, a jolly queer lot. See ?'

'Let me try it,' said Pyecraft.

I leant back in my chair. My imagination made one mighty effort and fell flat within me. 'What in Heaven's name Pyecraft,' I asked, 'do you think you'll look like when you get thin ?'

He was impervious to reason. I made him promise never to say a word to me about his disgusting fatness again whatever happened—never, and then I handed him that little piece of skin.

'It's nasty stuff.' I said.

'No matter,' he said, and took it.

He goggled at it. 'But—but—' he said.

He had just discovered that it wasn't English.

'To the best of my ability,' I said, 'I will do you a translation.'

I did my best. After that we didn't speak for a fortnight. Whenever he approached me I frowned and motioned him away, and he respected our compact, but at the end of a fortnight he was as fat as ever. And then he got a word in.

'I must speak,' he said. 'It isn't fair. There's something wrong. It's done me no good. You're not doing your great-grandmother justice.'

'Where's the recipe ?'

He produced it gingerly from his pocket-book.

I ran my eye over the items. 'Was the egg addled ?' I asked.

'No. Ought it to have been ?'

'That,' I said, 'goes without saying in all my poor dear great-grandmother's recipes. When condition or quality is not specified you must get the worst. She was drastic or nothing. . . . And there's one or two possible alternatives to some of these other things. You got *fresh* rattlesnake venom ?'

'I got a rattlesnake from Jamrach's. It cost—it cost—'

'That's your affair, anyhow. This last item—'

'I know a man who—'

'Yes, H'm. Well, I'll write the alternatives down. So far as I know the language, the spelling of this recipe is particularly atrocious. By-the-bye, dog here probably means pariah dog.'

For a month after that I saw Pyecraft constantly at the club and as fat and anxious as ever. He kept our treaty, but at times he broke the spirit of it by shaking his head despondently. Then one day in the cloakroom he said, 'Your great-grandmother.'

'Not a word against her,' I said ; and he held his peace. I could have fancied he had desisted, and I saw him one day talking to three new members about his fatness as though he was in search of other recipes. And then, quite unexpectedly, his telegram came.

'Mr Formalyn !' bawled a page-boy under my nose, and I took the telegram and opened it at once.

'*For Heaven's sake come. Pyecraft.*'

'H'm,' said I, and to tell the truth I was so pleased at the rehabilitation of my great-grandmother's reputation this evidently promised that I made a most excellent lunch.

I got Pyecraft's address from the hall porter. Pyecraft inhabited the upper half of a house in Bloomsbury, and I went there so soon as I had done my coffee and Trappistine. I did not wait to finish my cigar.

'Mr Pyecraft ?' said I, at the front door.

They believed he was ill ; he hadn't been out for two days.

'He expects me,' said I, and they sent me up.

I rang the bell at the lattice-door upon the landing.

'He shouldn't have tried it, anyhow,' I said to myself. A man who eats like a pig ought to look like a pig.' An obviously worthy woman, with an anxious face and

a carelessly placed cap, came and surveyed me through the lattice.

I gave my name and she opened his door for me in a dubious fashion.

'Well ?' said I, as we stood together inside Pyecraft's piece of the landing.

'e said you was to come in if you came,' she said, and regarded me, making no motion to show me anywhere. And then, confidentially, "'e's locked in, sir.'

'Locked in ?'

'Locked himself in yesterday morning an 'asn't let any one in since, sir. And ever and again *swearing*. Oh, my !'

I stared at the door she indicated by her glances. 'In there ?' I said.

'Yes, sir.'

'What's up ?'

She shook her head sadly, "'e keeps on calling for vittles, sir. 'eavy vittles 'e wants. I get 'im what I can. Port 'e's 'ad, soot puddin,' sossiges, noo bread. Everything like that. Left outside, if you please, and me go away. 'e's eating, sir, something *awful*.'

There came a piping bawl from inside the door : 'That Formalyn ?'

'That you, Pyecraft ?' I shouted, and went and banged the door.

'Tell her to go away.'

I did.

Then I could hear a curious pattering upon the door, almost like some one feeling for the handles in the dark, and Pyecraft's familiar grunts.

'It's all right,' I said, 'she's gone.'

But for a long time the door didn't open.

I heard the key turn. Then Pyecraft's voice said, 'Come in.'

I turned the handle and opened the door. Naturally

I expected to see Pyecraft.

Well, you know, he wasn't there!

I never had such a shock of my life. There was his sitting-room in a state of untidy disorder, plates and dishes among the books and writing things, and several chairs overturned, but Pyecraft—

'It's all right, o' man; shut the door,' he said, and then I discovered him.

There he was right up close to the cornice in the corner by the door, as though some one had glued him to the ceiling. His face was anxious and angry. He panted and gesticulated.

'Shut the door,' he said. 'If that woman gets hold of it—'

I shut the door, and went and stood away from him and stared.

'If anything gives way and you tumble down,' I said, 'you'll break your neck, Pyecraft.'

'I wish I could,' he wheezed.

'A man of your age and weight getting up to kiddish gymnastics—'

'Don't,' he said, and looked agonized.

'I'll tell you,' he said, and gesticulated.

'How the deuce,' said I, 'are you holding on up there?'

And then abruptly I realized that he was not holding on at all, that he was floating up there—just as a gas-filled bladder might have floated in the same position. He began a struggle to thrust himself away from the ceiling and to clamber down the wall to me. 'It's that prescription,' he panted, as he did so. 'Your great-gran—'

He took hold of a framed engraving rather carelessly as he spoke and it gave way, and he flew back to the ceiling again, while the picture smashed onto the sofa. Bump he went against the ceiling, and I knew then why he was all over white on the more salient curves and

angles of his person. He tried again more carefully, coming down by way of the mantel.

It was really a most extraordinary spectacle, that great, fat, apoplectic-looking man upside down and trying to get from the ceiling to the floor. ‘That prescription,’ he said. ‘Too successful.’

‘How?’

‘Loss of weight—almost complete.’

And then, of course, I understood.

‘By Jove, Pyecraft,’ said I, ‘what you wanted was a cure for fatness! But you always called it weight. You would call it weight.’

Somehow I was extremely delighted. I quite liked Pyecraft for the time. ‘Let me help you!’ I said, and took his hand and pulled him down. He kicked about, trying to get foothold somewhere. It was very like holding a flag on a windy day.

‘That table,’ he said, pointing, ‘is solid mahogany and very heavy. If you can put me under that.’

I did, and there he wallowed about like a captive balloon, while I stood on his hearth rug and talked to him.

I lit a cigar. ‘Tell me,’ I said, ‘what happened?’

‘I took it,’ he said.

‘How did it taste?’

‘Oh, *beastly!*’

I should fancy they all did. Whether one regards the ingredients or the probable compound or the possible results, almost all my great-grandmother’s remedies appear to me at least to be extraordinarily uninviting. For my own part—

‘I took a little sip first.’

‘Yes?’

‘And as I felt lighter and better after an hour, I decided to take the draught.’

‘My dear Pyecraft!’

'I held my nose,' he explained. 'And then I kept on getting lighter and lighter and lighter—and helpless, you know.'

He gave way suddenly to a burst of passion 'What the goodness am I to do?' he said.

'There's one thing pretty evident,' I said, 'that you mustn't do. If you go out of doors you'll go up and up.' I waved an arm upward. 'They'd have to send Santos-Dumont after you to bring you down again.'

'I suppose it will wear off?'

I shook my head. 'I don't think you can count on that,' I said.

And then there was another burst of passion, and he kicked out at adjacent chairs and banged the floor. He behaved just as I should have expected a great, fat, self-indulgent man to behave under trying circumstances—that is to say, very badly. He spoke of me and of my great-grandmother with an utter want of discretion.

'I never asked you to take the stuff,' I said.

And generously disregarding the insults he was putting upon me, I sat down in his armchair and began to talk to him in a sober, friendly fashion.

I pointed out to him that this was a trouble he had brought upon himself, and that it had almost an air of poetical justice. He had eaten too much. This he disputed, and for a time we argued the point.

He became noisy and violent, so I desisted from this aspect of his lesson. 'And then,' said I, 'you committed the sin of euphuism. You called it, not Fat, which is just and inglorious, but Weight. You—'

He interrupted to say that he recognized all that. What was he to do?

I suggested he should adapt himself to his new conditions. So we came to the really sensible part of the business. I suggested that it would not be difficult for him to learn to walk about on the ceiling with his

hands—

‘I can’t sleep,’ he said.

But that was no great difficulty. It was quite possible, I pointed out, to make a shake-up under a wire mattress, fasten the under thing on with tapes, and have a blanket, sheet, and coverlet to button at the side. He would have to confide in his housekeeper, I said; and after some squabbling he agreed to that. (Afterwards it was quite delightful to see the beautifully matter-of-fact way with which the good lady took all these amazing inversions.) He could have a library ladder in his room, and all his meals could be laid on the top of his bookcase. We also hit on an ingenious device by which he could get to the floor whenever he wanted, which was simply to put the *British Encyclopaedia* (tenth edition) on the top of his open shelves. He just pulled out a couple of volumes and held on, and down he came. And we agreed there must be iron staples along the skirting, so that he could cling to those whenever he wanted to get about the room on the lower level.

As we got on with the thing I found myself almost keenly interested. It was I who called in the house-keeper and broke matters to her, and it was I chiefly who fixed up the inverted bed. In fact, I spent two whole days at his flat. I am a handy, interfering sort of man with a screwdriver, and I made all sorts of ingenious adaptations for him—ran a wire to bring his bells within reach, turned all his electric lights up instead of down, and so on. The whole affair was extremely curious and interesting to me, and it was delightful to think of Pyecraft like some great fat blow-fly, crawling about on his ceiling and clambering round the lintels of his doors from one room to another, and never, never, never coming to the club any more. . . .

Then, you know, my fatal ingenuity got the better of me. I was sitting by his fire drinking his whisky, and

he was up in his favourite corner by the cornice, tacking a Turkey carpet to the ceiling, when the idea struck me. 'By Jove, Pyecraft!' I said, 'all this is totally unnecessary.'

And before I could calculate the complete consequence of my notion I blurted it out. 'Lead underclothing,' said I, and the mischief was done.

Pyecraft received the thing almost in tears. 'To be right ways up again—' he said.

I gave him the whole secret before I saw where it would take me. 'Buy sheet lead,' I said; 'stamp it into discs. Sew 'm all over your underclothes until you have enough. Have lead-soled boots, carry a bag of solid lead, and the thing is done! Instead of being a prisoner here you may go abroad again, Pyecraft; travel—'

A still happier idea came to me.

'You need never fear a shipwreck. All you need do is just slip off some or all of your clothes, take the necessary amount of luggage in your hand, and float up in the air—'

In his emotion he dropped the tack-hammer within an ace of my head. 'By Jove!' he said, 'I shall be able to come back to the club again.'

The thing pulled me up short. 'By Jove!' I said faintly. 'Yes. Of course—you will.'

He did. He does. There he sits behind me now—stuffing—as I live—a third go of buttered tea-cake. And no one in the whole world knows—except his house-keeper and me—that he weighs practically nothing; that he is a mere boring mass of assimilatory matter, mere clouds in clothing, *niente, nefas*, the most inconsiderable of men. There he sits watching until I have done this writing. Then, if he can, he will waylay me. He will come billowing up to me. . . .

He will tell me over again all about it, how it feels, how it doesn't feel, how he sometimes hopes it is passing

off a little. And always somewhere in that fat, abundant discourse he will say, 'The secret's keeping, eh ? If any one knew of it—I should be so ashamed . . . Makes a fellow look such a fool, you know. Crawling about on a ceiling and all that . . .'

And now to elude Pyecraft, occupying, as he does, an admirable strategic position between me and the door.

H. G. WELLS

XII

AN ASTROLOGER'S DAY

PUNCTUALLY at midday he opened his bag and spread out his professional equipment ; a dozen cowrie shells, a square piece of cloth, with obscure mystic charts on it, a note book and a bundle of palmyra writing. His forehead was resplendent with sacred ash and vermillion and his eyes sparkled with a sharp abnormal gleam, which was really an outcome of a continual searching look for customers, but which his simple clients took to be a prophetic light and felt comforted. The power of his eyes was considerably enhanced by their position ; placed as they were between the painted forehead and the dark whiskers and beard which streamed down his cheeks and chin : even a half-wit's eyes would sparkle in such a setting. To crown the effect he wound a saffron-coloured turban around his head. This colour-scheme never failed ; people were attracted to him as bees are attracted to cosmos or dhalia stalks. He sat under the boughs of a spreading tamarind tree which flanked a path running through the Town Hall Park. It was a remarkable place in many ways : a surging crowd was always moving up and down this narrow road morning to night. A variety of trade and occupation was represented all along its way : medicine-sellers, sellers of stolen hardware and junk, magicians, and above all an auctioneer of cheap cloth, who created enough din all day to attract the whole town ; next to him in vociferousness came a vendor of fried groundnut, on his right, who gave his ware a fancy name each day calling it 'Bombay Ice-cream' one day, and on the next 'Delhi Almond', and on the third 'Raja's Delicacy' and so on and so forth, and people flocked to him. A considerable portion of this crowd dallied before the astrologer too. The

astrologer transacted his business by the light of a flare which crackled and smoked up above the groundnut heap. Half the enchantment of the place was due to the fact that it did not have the benefit of Municipal lighting. The place was lit up by shop lights. One or two had hissing gaslights, some had naked flares stuck on poles, some old cycle lamps, and one or two, like the astrologer, managed without lights of their own. It was a bewildering crisscross of light rays and moving shadows. This suited the astrologer very well, for it heightened the effect of his personality and utterances. He had to depend upon all this for success in profession, for the simple reason that he had not in the least intended to be an astrologer when he began life; and he knew no more of what was going to happen to others than he knew what was going to happen to himself next minute. He was as much a stranger to the stars as were his innocent customers. Yet, he said things which pleased and astonished everyone: that was more a matter of study, practice, and shrewd guess-work. All the same it was as much an honest man's labour as any other, and he deserved the wages he carried home at the end of a day.

He had left his village without previous thought or plan. If he had continued there he would have carried on the work of his forefathers: tilling the land, living, marrying, and ripening in his cornfield and ancestral home. But that was not to be. He left home without telling any one, and did not rest till he left it behind a couple of hundred miles. To a villager it is a great deal, as if an ocean flowed between.

He had a working analysis of mankind's troubles: marriage, money, and the tangles of human ties. Long practice had sharpened his perception. Within five minutes, he understood what was wrong. He charged three pies per question, never opened his mouth till the other had spoken for at least ten minutes, which pro-

vided him enough stuff for a dozen answers and advices. When he told the person before him, gazing at his palm : ' In many ways you are not getting the fullest results for your efforts,' nine out of ten were disposed to agree with him. Or he questioned : ' Is there any woman in your family, may be even a distant relative, who is not well disposed towards you ? ' Or he gave an analysis of character : ' Most of your troubles are due to your nature. How can you be otherwise with Saturn where he is ? You have an impetuous nature and a rough exterior.' This endeared him to their hearts immediately, for even the mildest of us loves to think that he has a forbidding exterior.

The nuts-vendor blew out his flare, and rose to go home. A shift of green light strayed in from somewhere and touched the ground before the astrologer. He picked up his cowrie shells and paraphernalia and was putting them back into his bag when the green shaft of light was blotted out ; he looked up and saw a person standing before him. He sensed a possible client and said : ' You look so careworn. It will do you good to sit down for a while and chat with me.' The other grumbled some reply vaguely. The astrologer pressed his invitation ; whereupon the other thrust his palm under his nose saying, ' You call yourself an astrologer ? ' The astrologer felt challenged and said, tilting his palm towards the green shaft of light ' Yours is a nature . . .' ' Oh, stop that,' the other said. ' Tell me something worthwhile . . .' Our friend felt piqued. ' I charge only three pies per question, and what you get ought to be good enough for your money . . .' At this the other withdrew his arm, took out an anna and flung it out to him, saying : ' I have some questions to ask. If I prove you are bluffing, you must return that anna to me with interest.' ' If you find my answers satisfactory, will you give me five rupees ? ' ' No.' * Or will you give me

eight annas ?' 'All right, provided you give me twice as much if you are wrong . . .,' said the stranger.. This pact was accepted after a little further argument. The astrologer sent up a prayer to heaven, as the other lit a cheroot. The astrologer caught a glimpse of his face by the match-light. There was a pause as cars hooted on the road, jutka-drivers swore at their horses, and the babble of the motley agitated the semi-darkness of this park. The other sat down, sucking his cheroot and puffing out—sat ruthlessly. The astrologer felt very uncomfortable: 'Here take your anna back. I am not used to such challenges. It is late for me today . . .' He made preparations to bundle up. The other held his wrist and said: 'You can't get out of it now. You dragged me in while I was passing.' The astrologer shivered in his grip; and his voice shook and became faint: 'Leave me today. I will speak to you tomorrow.' The other thrust his palm in his face and said: 'Challenge is challenge. Go on.' The astrologer proceeded with his throat drying up: 'There is a woman . . .'

'Stop it,' said the other. 'I don't want to hear it. Shall I succeed in my present search? Answer this and go. Otherwise, I will not let you go till you disgorge all your coins.' The astrologer muttered a few incantations, and replied, rallying himself: 'All right. I will speak. But will you give me a rupee if what I say is convincing? Otherwise, I will not open my mouth, and you may do what you like.' After a good deal of haggling the other agreed. The astrologer said: 'You were left for dead. Am I right?' 'Ah, tell me more.'

'A knife has passed through you once?' said the astrologer.

'Good fellow!' He bared his chest to show the scar. 'What else ?'

'And then you were pushed into a well nearby in the

field. You were left for dead.'

'I should have been dead if some people passing by had not chanced to peep into the well,' exclaimed the other overwhelming by enthusiasm.

'When shall I get at him?' he asked clenching his fist.

'In the next world,' answered the astrologer. 'He died four months ago in a far-off town. You will never see any more of him.' The other groaned on hearing it. The astrologer proceeded:

'Guru Nayak . . .' he called.

'You know my name!' the other said, taken aback.

'As I know all other things. Guru Nayak, listen carefully to what I have to say. Your village is two days' journey due north of this town. Take the next train and be gone. I see once again great danger to your life if you stay out of home.' He took out a pinch of sacred ash and held it to him. 'Rub it on your forehead and go home. Never travel southward again, and you will live to be a hundred.'

'Why should I leave home again?' the other said reflectively. 'I was only going out now and then to look for him and to choke out his life if I met him.' He shook his head regretfully. 'He escaped my hands. I hope at least he died as he deserved.'

'Yes,' said the astrologer. 'He was crushed under a lorry.' The other looked gratified to hear it.

The place was deserted by the time the astrologer picked up his articles and put them into his bag. The green shaft was also gone, leaving the place in darkness and silence. The stranger had gone off into the night, after giving the astrologer a handful of coins.

It was nearly midnight when the astrologer reached home. His wife was waiting for him at the door and demanded an explanation. He flung the coins at her and said: 'Count them. One man gave all that.'

'Twelve and a half annas,' she said counting. She was overjoyed.

'I can buy some jaggery and coconut tomorrow: The child has been asking for sweets for so many days now. I will prepare some nice stuff for her.'

'The swine has cheated me! He promised me a rupee,' said the astrologer. She looked up at him: 'You look worried. What is wrong?'

'Nothing.'

After dinner, sitting on the pyol he told her: 'Do you know a great load is gone from me today? I thought I had the blood of a man on my hands all these years. That was the reason why I ran away from home, settled here, and married you. He is alive.'

She gasped: 'You tried to kill!'

'Yes, in our village, when I was a silly youngster. We drank, gambled and quarrelled badly one day—why think of it now? Time to sleep,' he said yawning, and stretched himself on the pyol.

R. K. NARAYAN

ASPECTS OF DEMOCRACY

XIII

TWO PATTERNS

AMERICANS are apt to think that our democracy is rather a sham, because it is different in so many ways from theirs, and especially because of our monarchy and our class system. I suppose it is inevitable for the people of any particular country to think that their own ways are more natural, their own system somehow more right than the systems of other countries. It takes travel, or some knowledge of history, or both—together with a certain effort of mind—to realize that this need not be the case. Democracy, for example, is not in any way a fixed system.

Any particular democracy is a particular attempt to realize the general democratic ideal. And that ideal is, historically speaking, something very recent. It is first of all the belief that individual human beings are what matter most—more than the State, or the total of national wealth, or anything else whatsoever. Then it is the belief in equality, not in the sense that everybody is alike or equally gifted, which is obviously untrue, but in the sense that everyone should have certain basic opportunities. The European political theorists of the eighteenth century thought in terms of 'natural rights': the American Constitution speaks of 'life, liberty, and the pursuit of happiness'. Today we are more inclined to use phrases like 'privileges and opportunities'. What each age has meant is that everyone should have an equal chance to a reasonable development as individual human beings, irrespective of accidents of birth or fortune. The democratic ideal is also the belief that governments should exist not only to benefit but to represent the people as a whole. So democracy, since it thus presupposes government by consent, implies tolerance; since

it presupposes equality, implies equal opportunities; since it presupposes the ultimate value of individual men and women, implies freedom.

That is the democratic ideal. Actual democracies represent attempts at realizing this ideal. But, to date, all of them are still sadly imperfect; and they have pursued different methods in different countries.

Thus democracies can differ in two quite different ways. They can be more or less imperfect. There are democracies in which considerable sections of the people are not allowed to vote. That was so in Britain before the Reform Bill of 1832, and it is still so in the southern U.S.A. (for it makes no real difference whether people are disfranchised under the constitution, or in fact are simply not allowed to vote). Such democracies are obviously less perfect than those where there is real universal suffrage.

But besides differing on an up-and-down scale, they can also differ sideways, so to speak, just like different kinds of animals. A dogfish is a higher kind of animal than a jellyfish. But no one can say whether it is higher or lower than a lobster—its organization is quite different; it does the same kind of things, but in different ways. So with democracies. The American and British brands are both on about the same level of progress towards the ideal; but they are very different in their organization.

The chief difference lies in the British class system. Of course, in the U.S.A. colour and nationality to a certain degree take the place of class. On the whole, negroes and recent immigrants get fewer opportunities, in the same sort of way as the working classes in Britain get fewer opportunities. It is, of course, also true that, with the intense growth of industrialism in the U.S.A., and with the closing of the frontier, a new class system, based mainly on money, but in part (in the East) on

ancestry, is beginning to grow up—and doing so with rather alarming rapidity in some regions. But the British class system is much more rigid, and it is also historically ingrained, being a gradual evolution from the feudal system centuries back. In fact, the development of British society and institutions has almost always been gradual. It was this organic quality which Edmund Burke defended so eloquently against the theorists who wanted to imitate the French Revolution by making a clean sweep and starting again from as near scratch as possible. As he wrote, ‘Society is indeed a contract . . . it is a partnership in all science ; a partnership in all art ; a partnership in every virtue and in all perfection. As the end of such a partnership cannot be obtained in many generations, it becomes a partnership not only between those who are living, but between those who are living, those who are dead, and those who are to be born.’ Burke, as usual, is being rhetorical ; but his rhetoric clothes an important idea, the desirability of an organic society in general, and of an organic evolution where possible, as against a violent revolution. For the same reason, he upheld the class system of his time, but was careful to add that every society must contain machinery for change.

I am not attempting to make out that the British class system is the best way, or even a good way, of organizing a democracy. All I am here concerned with is to try to make clear that it is not incompatible with a reasonable amount of democracy (and also with a reasonably rapid progress towards more and better democracy), and that it has still, and has had in the past, quite a number of merits. Its merits are orderliness and a sense that everyone has a job of work to do for the community ; among the more privileged, a sense of duty towards society and towards those who happen to be less fortunate ; a very considerable amount of freedom within the

boundaries set by the system ; sufficient fluidity to give-talent a reasonable chance to rise, and to allow new classes, as they become important, to take their share of leadership and responsibility ; plenty of opportunity for people to take part in their own local government ; and still more opportunity for them to form voluntary associations to look after their own interests. This is a very important aspect of democracy ; for, to quote again from Burke, 'To be attached to the subdivision, to love the little platoon, is the first principle (the germ as it were) of public affections'.

About the monarchy I need not say much. Everyone, even in the republican U.S.A., should, I hope, realize that being a king means something very different to George VI from what it did to George III. The British King is no longer an autocrat, and indeed, has lost almost every vestige of political power. He is now, in one sense, only a symbol of the unity of the nation, and of the Empire. But symbols can be very important, and our twentieth-century kings are very active, hard-working, and useful members of the community, focusing loyalties, giving the necessary personal touch to the vast impersonal machinery of a modern state, and infinitely more democratic than your Führers or your Duces, with their bodyguards and their pomp. The American President, too, is a democratic personal head ; but Presidents are also members of political parties, and some of the bitterness of politics inevitably hangs around them. There is something to be said for a personal head who is above politics, who succeeds to his position by virtue of inheritance, and not by having to get himself elected, who cannot, save for rare constitutional reasons, be got rid of, and who embodies an immemorial tradition and ritual.

There is naturally another side to the picture. The traditional side of the monarchy can be overdone, and

may make the ritual too much a survival of the past, too little representative of today: some people felt that about our last Coronation ceremonies. It is difficult for the existence of a court not to encourage a certain not very desirable snobbery. Certain traditional vested interests may manage to entrench themselves under the sheltering wing of monarchy.

Similarly with the British class system. It undoubtedly stimulates snobbery. Many among the privileged classes come to take their privileged position for granted, and rather forget their obligations of service. In small communities like the village, the local bigwigs may easily become petty tyrants instead of real leaders or public servants. The fear of losing privileges may, consciously or unconsciously, generate hostility or overbearingness towards the so-called lower classes, while conversely jealousy may make the under-privileged bitter and resentful. Most important of all, the class system does mean a considerable deprivation of equal opportunity; and this is a very real negation of the democratic ideal.

All the same, British democracy manages to work reasonably well, in spite of obvious and numerous defects. The best proof of that is that our system has, in the last hundred years, become more, and not less, democratic, in spite of all the undemocratic handicaps it has inherited from the past, and all the new anti-democratic burdens that the *laissez-faire* period managed to pile on its back.

Let me end with a brief picture of how democracy means something real to the average Englishman today. First, Britain is politically democratic. There is real universal suffrage for men and women alike. There is much less intimidation of voters than takes place in various American States, and much less political graft. This is particularly true of city government: the general record of the London County Council is much pleasanter

to contemplate than that of the New York City administration, for instance. We have never had any anti-democratic organization so powerful as the Ku-Klux-Klan during its brief but unenviable prominence, nor any political machines so ruthless and corrupt as those of certain American States, or as Tammany in its hey-day.

Local government has, on the whole, been in the hands of local people, duly elected to represent the balance of local interests ; the small political boss has never played so unpleasant a role here as in parts of the U.S.A., and local government is largely in the hands of the working class. The mayor of a small city, or the members of a Borough Council, are just as likely to be working men as aristocrats, or rich merchants or business men.

Britain's legal system is reasonably democratic : the high cost of going to law is its only serious handicap. There has been very little corruption, either among judges or police, which is more than some regions in the U.S.A. can say of themselves ; and racketeering has never been able to become a major scandal in this country. The Civil Service is appointed by the democratic system of examination : the undemocratic 'spoils' system has never played the part it has done in the U.S.A. Then we must remember that Britain was a pioneer of religious freedom as well as of political freedom. The growth of nonconformity, with its myriads of active, independent, and earnest congregations, played a great part in encouraging individual independence and all kinds of crusading movements. Democracy can come alive in various ways, and one of them is by having a sense of mission about various democratic ideals. The British anti-slavery movement is a notable example of this ; and the same sense of crusading for freedom on a world-wide scale animated much of our foreign policy during the nineteenth century.

The Protestant tradition of independence also found

embodiment in all sorts of organizations for self-help. Our British Trade Unions, our innumerable Friendly Societies with their mutual insurance schemes, and later, our Co-operative Movement, all came into being as vigorous expressions of British democracy. The British idea of individual liberty is crystallized in the phrase 'The Englishman's home is his castle'. In addition, press, speech, and opinion are as free with us as in any country in the world. The speakers at Hyde Park Corner, letting off steam about religion, or Communism, or Fascism, or any other 'ism' they like, are a symbol of that aspect of democracy. Even Americans seem to find it extraordinary that such violent and revolutionary utterances are so freely tolerated, Sunday after Sunday, in the very centre of the Empire.

In its labour relations, Britain has, on the whole, been more democratic than the U.S.A. Our strikes have never been marred by such violence as in America, nor turned into miniature civil wars; the military power has not been so much used to overawe labour; and we have not suffered so much from illegal or extra-legal *vigilante* organizations. Collective bargaining and political Trade Unionism are among the useful machinery by which British democracy has come to express itself.

As regards education, elementary education is free and universal, secondary education is cheap and of high standard, and, after many years, University education has become pretty thoroughly democratized. Voluntary effort is very prominent in this field and works on the whole in a democratic direction. Our educational system may be class-ridden, but it partly compensates for this by its extreme variety and the freedom from regimented uniformity which it enjoys.

We still have great inequality of wealth, though with us taxation destroys a considerably greater amount of that inequality than is the case in America; but the

remarkable growth of our social services at least ensures that nobody shall fall below a certain minimum standard of life, that unemployment and sickness shall not spell destitution, and that the stigma of receiving charity or poor relief has been replaced by pensions and other benefits which men and women can accept as rights without any loss of self-respect.

Finally, British democracy in its imperial aspect has made one great invention—that of the Commonwealth of free and equal Dominions, bound together by common values and ideas instead of by compulsion or even by a formal constitution. The granting of self-government to South Africa after the Boer War, and the acceptance of Eire's neutrality in this war, are good examples of the democratic spirit at work in international relations.

Summing up, I think it is fair to say that the average Englishman has had the sense of being reasonably free to do and say what he likes, of being able to express his political views freely and fairly effectively, of being free to organize with others to stand up for his rights and interests, of belonging to a country which, on the whole, has consistently stood for freedom, of being given a reasonable opportunity to make something worth while out of his individual life. And that is a real form of democracy, if very far from a perfect one. Of late years that sense has been somewhat shaken by economic insecurity and the threat of war looming over from Europe. But he is now very much determined that the freedoms and opportunities he has achieved in the past shall not be lost, as has been shown during the war by the many protests that have been successfully made, both within and without Parliament, whenever the Government has gone too far in curtailing the safeguards of liberty for its citizens; and this determination is yet another expression of the democratic spirit.

, JULIAN HUXLEY

XIV

FORMS OF FREEDOM

THE social effects of scientific technique have already been many and important, and are likely to be even more noteworthy in the future. Some of these effects depend upon the political and economic character of the country concerned ; others are inevitable, whatever this character may be. I propose in this chapter to consider only the inevitable effects.

The most obvious and inescapable effect of scientific technique is that it makes society more organic, in the sense of increasing the inter-dependence of its various parts. In the sphere of production, this has two forms. There is first the very intimate interconnexion of individuals engaged in a common enterprise, e.g., in a single factory ; and secondly there is the relation, less intimate but still essential, between one enterprise and another. Each of these becomes more important with every advance in scientific technique.

A peasant in an unindustrialized country may produce almost all his own food by means of very inexpensive tools. These tools, some of his clothes, and a few things such as salt, are all that he needs to buy. His relations with the outer world are thus reduced to a minimum. So long as he produces, with the help of his wife and children, a little more food than the family requires, he can enjoy almost complete independence, though at the cost of hardship and poverty. But in a time of famine he goes hungry, and probably most of his children die. His liberty is so dearly bought that few civilized men would change places with him. This was the lot of most of the population of civilized countries till the rise of industrialism.

Although the peasant's lot is in any case a hard one, it

is apt to be rendered harder by one or both of two enemies: the money-lender and the landowner. In any history of any period, you will find roughly the following gloomy picture: 'At this time the old hardy yeoman stock had fallen upon evil days. Under threat of starvation from bad harvests, many of them had borrowed from urban landowners, who had none of their traditions, their ancient piety, or their patient courage. Those who had taken this fatal step became, almost inevitably, the slaves or serfs of members of the new commercial class. And so the sturdy farmers, who had been the backbone of the nation, were submerged by supple men who had the skill to amass new wealth by dubious methods.' You will find substantially this account in the history of Attica before Solon, of Latium after the Punic Wars, of England in the early nineteenth century, of Southern California as depicted in Norris' *Octopus*, of India under the British Raj, and of the reasons which have led Chinese peasants to support communism. The process, however regrettable, is an unavoidable stage in the integration of agriculture into a larger economy.

By way of contrast with the primitive peasant, consider the agrarian interests in modern California or Canada or Australia or the Argentine. Everything is produced for export, and the prosperity to be brought by exporting depends upon such distant matters as war in Europe or Marshall Aid or the devaluation of the pound. Everything turns on politics, on whether the Farm Block is strong in Washington, whether there is reason to fear that Argentine may make friends with Russia, and so on. There may still be nominally independent farmers, but in fact they are in the power of the vast financial interests that are concerned in manipulating political issues. This interdependence is in no degree lessened—perhaps it is even increased—if the countries concerned are socialist, as, for example, if the Soviet Government and

the British Government make a deal to exchange food for machinery. All this is the effect of scientific technique in agriculture. Malthus, at the beginning of the nineteenth century, wrote: 'In the wildness of speculation it has been suggested (of course more in jest than in earnest) that Europe should grow its corn in America, and devote itself solely to manufactures and commerce.' It turned out that the speculation was by no means 'wild'.

So much for agriculture. In industry, the integration brought about by scientific technique is much greater and more intimate.

One of the most obvious results of industrialism is that a much larger percentage of the population live in towns than was formerly the case. The town-dweller is a more social being than the agriculturist, and is much more influenced by discussion. In general, he works in a crowd, and his amusements are apt to take him into still larger crowds. The course of nature, the alterations of day and night, summer and winter, wet or shine, make little difference to him; he has no occasion to fear that he will be ruined by frost or drought or sudden rain. What matters to him is his human environment, and his place in various organizations especially.

Take a man who works in a factory, and consider how many organizations affect his life. There is first of all the factory itself, and any larger organization of which it may be a part. Then there is the man's trade union and his political party. He probably gets house room from a building society or public authority. His children go to school. If he reads a newspaper or goes to a cinema or looks at a football match, these things are provided by powerful organizations. Indirectly, through his employers, he is dependent upon those from whom they buy their raw material and those to whom they sell their finished product. Above all, there is the State, which taxes him and may at any moment order him to go and get

killed in war, in return for which it protects him against murder and theft so long as there is space, and allows him to buy a fixed modicum of food.

The capitalist in modern England, as he is never weary of telling us, is equally hemmed in. Half, or more than half, of his profits go to a government that he detests. His investing is severely controlled. He needs permits for everything, and has to show cause why he should get them. The government has views as to where he should sell. His raw material may be very difficult to get, particularly if it comes from a dollar area. In all dealings with his employees he has to be careful to avoid stirring up a strike. He is haunted by fear of a slump, and wonders whether he will be able to keep up the premiums on his life insurance. He wakes in the night in a cold sweat, having dreamed that war has broken out and his factory and his house and his wife and his children have all been wiped out. But, although his liberty is destroyed by such a multiplicity of organizations, he is busy trying to make more of them: New armed units, Western Union, Atlantic Pact, lobbies, and fighting unions of manufacturers. In nostalgic moments he may talk about *laissez-faire*, but in fact he sees no hope of safety except in new organizations to fight existing ones that he dislikes, for he knows that as an isolated unit he would be powerless, and as an isolated State his country would be powerless.

The increase of organization has brought into existence new positions of power. Every body has to have executive officials, in whom, at any moment, its power is concentrated. It is true that officials are usually subject to control, but the control may be slow and distant. From the young lady who sells stamps in a Post Office all the way up to the Prime Minister, every official is invested, for the time being with some part of the power of the State. You can complain of the young lady if her manners

are bad, and you can vote against the Prime Minister at the next election if you disapprove of his policy. But both the young lady and the Prime Minister can have a very considerable run for their money before (if ever) your discontent has any effect. This increase in the power of officials is a constant source of irritation to everybody else. In most countries they are much less polite than in England; the police, especially in America for instance, seem to think you must be a rare exception if you are not a criminal. The tyranny of officials is one of the worst results of increasing organization, and one against which it is of the utmost importance to find safeguards if a scientific society is not to be intolerable to all but an insolent aristocracy of Jacks-in-office. But for the present I am concerned with description, not with schemes of reform.

The power of officials is, usually, distinct from that of people who are theoretically in ultimate control. In large corporations, although the directors are nominally elected by the shareholders, they usually manage, by various devices, to be in fact self-perpetuating, and to acquire new directors, when necessary, by co-option more or less disguised as election. In British politics, it is a commonplace that most Ministers find it impossible to cope with their civil servants, who in effect dictate policy except on party questions that have been prominently before the public. In many countries the armed forces are apt to get out of hand and defy the civil authorities. Of the police I have already spoken, but concerning them there is more to be said. In countries where the communists enter coalition governments, they always endeavour to make sure of control of the police. When once this is secured, they can manufacture plots, make arrests, and extort confessions freely. By this means they pass from being participants in a coalition to being the whole government. The problem of causing the police to obey the

law is a very difficult one ; it is, for example, very far from being solved in America, where confessions are apt to be extorted by 'third degree' from people who may well be innocent. (*See Our Lawless Police*, by Ernest Jerome Hopkins, N.Y., Viking Press).

The increased power of officials is an inevitable result of the greater degree of organization that scientific technique brings about. It has the drawback that it is apt to be an irresponsible, behind-the-scenes power, like that of Emperors' eunuchs and Kings' mistresses in former times. To discover ways of controlling it is one of the most important political problems of our time. Liberals protested, successfully, against the power of kings and aristocrats ; socialists protested against the power of capitalists. But unless the power of officials can be kept within bounds, socialism will mean little more than the substitution of one set of masters for another : all the former power of the capitalist will be inherited by the official. In 1942, when I lived in the country in America, I had a part-time gardener, who spent the bulk of his working day making munitions. He told me with triumph that his union had secured the 'closed shop'. A little while later he told me, without triumph, that the union dues had been raised and that the extra money went wholly to increase the salary of the secretary of the union. Owing to what was practically a war situation between labour and capital, any agitation against the secretary could be represented as treachery. This little story illustrates the helplessness of the public against its own officials, even where there is nominally complete democracy.

One of the drawbacks to the power of officials is that they are apt to be quite remote from the things they control. What do the men in the Education Office know about education ? Only what they dimly remember of their public school and university some twenty or thirty

years ago. What does the Ministry of Agriculture know about mangold-wurzels ? Only how they are spelt. What does the Foreign Office know about modern China ? After I had returned from China in 1921, I had some dealings with the permanent officials who determined British Far-Eastern policy, and found their ignorance unsurpassed except by their conceit. America has invented the phrase 'yes-men' for those who flatter great executives. In England we are more troubled by 'no-men', who make it their business to employ clever ignorance in opposing and sabotaging every scheme suggested by those who have knowledge and imagination and enterprise. I am afraid our 'no-men' are a thousand times more harmful than the American 'yes-men'. If we are to recover prosperity, we shall have to find ways of emancipating energy and enterprise from the frustrating control of constitutionally timid ignoramuses.

Owing to increase of organization, the question of the limits of individual liberty needs completely different treatment from that of nineteenth-century writers such as Mill. The acts of a single man are as a rule unimportant, but the acts of groups are more important than they used to be. Take, for example, refusal to work. If one man, on his own initiative, chooses to be idle, that may be regarded as his own affair ; he loses his wages, and there is an end of the matter. But if there is a strike in a vital industry, the whole community suffers. I am not arguing that the right to strike should be abolished ; I am only arguing that, if it is to be preserved, it must be for reasons concerned with this particular matter, and not on general grounds of personal liberty. In a highly-organized country there are many activities which are important to everybody, and without which there would be widespread hardship. Matters should be so arranged that large groups seldom think it to their interest to strike. This can be done by arbitration and conciliation,

or, as under the dictatorship of the proletariat, by starvation and police action. But in one way or another it must be done if an industrial society is to prosper.

War is a more extreme case than strikes, but raises very similar questions of principle. When two men fight a duel, the matter is trivial, but when two hundred million people fight two hundred million other people the matter is serious. And with every increase of organization war becomes more serious. Until the present century, the great majority of the population, even in nations engaged in such contests as the Napoleonic wars, were still occupied with peaceful pursuits, and as a rule little disturbed in their ordinary habits of life. Now almost everybody, women as well as men, are set to some kind of war work. The resulting dislocation makes the peace, when it comes, almost worse than the war. Since the end of the late war, throughout Central Europe, enormous numbers, men, women, and children, have died in circumstances of appalling suffering, and many millions of survivors have become homeless wanderers, uprooted, without work, without hope, a burden equally to themselves and to those who feed them. This sort of thing is to be expected when defeat introduces chaos into highly-organized communities.

The right to make war, like the right to strike, but in a far higher degree, is very dangerous in a world governed by scientific technique. Neither can be simply abolished, since that would open the road to tyranny. But in each case it must be recognized that groups cannot, in the name of freedom, justly claim the right to inflict great injuries upon others. As regards war, the principle of unrestricted national sovereignty, cherished by liberals in the nineteenth century and by the Kremlin in the present day, must be abandoned. Means must be found of subjecting the relations of nations to the rule of law, so that a single nation will no longer be, as at present, the

judge in its own cause. If this is not done, the world will quickly return to barbarism. In that case, scientific technique will disappear along with science, and men will be able to go on being quarrelsome because their quarrels will no longer do much harm. It is, however, just possible that mankind may prefer to survive and prosper rather than to perish in misery, and, if so, national liberty will have to be effectively restrained.

As we have seen, the question of freedom needs a completely fresh examination. There are forms of freedom that are desirable, and that are gravely threatened; there are other forms of freedom that are undesirable, but that are very difficult to curb. There are two dangers, both rapidly increasing. Within any given organization, the power of officials, or of what may be called the 'government', tends to become excessive, and to subject individuals to various forms of tyranny. On the other hand, conflicts between different organizations become more and more harmful as organizations acquire more power over their members. Tyranny within and conflict without are each other's counterpart. Both spring from the same source: the lust for power. A State which is internally despotic will be externally warlike, in both respects because the men who govern the State desire the greatest attainable extent and intensity of control over the lives of other men. The resultant two-fold problem, of preserving liberty internally and diminishing it externally, is one that the world must solve, and solve soon, if scientific societies are to survive.

Let us consider for a moment the social psychology involved in this situation.

Organizations are of two kinds, those which aim at getting something done, and those which aim at preventing something from being done. The Post Office is an example of the first kind; a fire brigade is an example of the second kind. Neither of these arouses much con-

troversy, because no one objects to letters being carried, and incendiaries dare not avow a desire to see buildings burnt down. But when what is to be prevented is something done by human beings, not by Nature, the matter is otherwise. The armed forces of one's own nation exist—so each nation asserts—to prevent aggression by other nations. But the armed forces of other nations exist—or so many people believe—to promote aggression. If you say anything against the armed forces of your own country, you are a traitor, wishing to see your fatherland ground under the heel of a brutal conqueror. If, on the other hand, you defend a potential enemy State for thinking armed forces necessary to its safety, you malign your own country, whose unalterable devotion to peace only perverse malice could lead you to question. I heard all this said about Germany by a thoroughly virtuous German lady in 1936 in the course of a panegyric on Hitler.

The same sort of thing applies, though with slightly less force, to other combatant organizations. My Pennsylvania gardener would not publicly criticize his trade union secretary for fear of weakening the union in contest with capitalists. It is difficult for a man of ardent political convictions to admit either the shortcomings of politicians of his own Party or the merits of those of the opposite Party.

And so it comes about that, whenever an organization has a combatant purpose, its members are reluctant to criticize their officials, and tend to acquiesce in usurpations and arbitrary exercises of power which, but for the war mentality, they would bitterly resent. It is the war mentality that gives officials and governments their opportunity. It is therefore only natural that officials and governments are prone to foster war mentality.

The only escape is to have the greatest possible number of disputes settled by legal process, and not by a trial

of strength. Thus here again the preservation of internal liberty and external control go hand in hand, and both equally depend upon what is *prima facie* a restraint upon liberty, namely an extension of the domain of law and of the public force necessary for its enforcement.

In what I have been saying so far in this chapter I feel that I have not sufficiently emphasized the gains that we derive from scientific technique. It is obvious that the average inhabitant of the United States at the present day is very much richer than the average inhabitant of England in the eighteenth century, and this advance is almost entirely due to scientific technique. The gain in the case of England is not so great, but that is because we have spent so much on killing Germans. But even in England there are enormous material advances. In spite of shortages, almost everybody has as much to eat as is necessary for health and efficiency. Most people have warmth in winter and adequate light after sunset. The streets, except in time of war, are not pitch dark at night. All children go to school. Everyone can get medical attendance. Life and property are much more secure (in peace time) than they were in the eighteenth century. A much smaller percentage of the population lives in slums. Travel is vastly easier, and many more amusements are available than in former times. The improvement in health would in itself be sufficient to make this age preferable to those earlier times for which some people feel nostalgic. On the whole, I think, this age is an improvement on all its predecessors except for the rich and privileged.

Our advantages are due entirely, or almost entirely, to the fact that a given amount of labour is more productive than it was in pre-scientific days. I used to live on a hill-top surrounded by trees, where I could pick up firewood with the greatest ease. But to secure a given amount of fuel in this way cost more human labour than

to have it brought across half England in the form of coal, because the coal was mined and brought scientifically, whereas I could employ only primitive methods in gathering sticks. In old days, one man produced not much more than one man's necessaries ; a tiny aristocracy lived in luxury, a small middle class lived in moderate comfort, but the great majority of the population had very little more than was required in order to keep alive. It is true that we do not always spend our surplus of labour wisely. We are able to set aside a much larger proportion for war than our ancestors could. But almost all the large-scale disadvantages of our time arise from failure to extend the domain of law to the settlement of disputes which, when left to the arbitrament of force, have become, through our very efficiency, more harmful than in previous centuries. This survival of formerly endurable anarchy must be dealt with if our civilization is to survive. Where liberty is harmful, it is to law that we must look.

BERTRAND RUSSELL

XV

NEW CLIMATES OF THE WORLD

SINCE I lost all regular employment eight years ago at sixty-six, I have been as variously busy as at any time in my life. But others have been busy also, changing the world as my generation knew it once. Fifty years ago those who set out to make a better world might feel, not unreasonably, that the greatest evil needing cure was poverty ; eleven years ago in the Beveridge Report I listed five giants for attack—Want, Disease, Squalor, Unemployment and Ignorance. Today the inhabited world has become two feverishly arming camps. Today tyranny has returned with a completeness and a savagery never compassed by the Kings and Emperors of the past.

‘Our country has come through a painful period of trial and disillusionment since the victory of 1945.’ So the new President of the U.S.A., himself one of the great figures of World War II, opened his first message on the State of the Nation, on 2 February 1953. But disappointment of nearly all the hopes and aims which led his nation into war under Franklin Roosevelt had long been implicit ; 1945 was a year of defeat, not of victory, for the U.S.A. and Britain and all who think like them.

My story, as set out here, seems in many ways out of date—in its happy activity of work and play, in its aims, its hopefulness and its difficulties and disappointments alike. Yet the central theme of the story—of Power and Influence as the two ways of doing things—is not out of date. The heart of the world’s problem today lies in finding the right means of controlling exercise of Power and securing a place for Influence.

In one of my first public speeches after issue of the Beveridge Report, at Oxford on 6 December 1942,¹ I

¹ Printed in *The Pillars of Security*, chapter 9.

defined democracy as a form of government which provides for peaceful change of the governors :

The essential part of democracy to me is not that I should spend a lot of time governing myself, for I have many more amusing things to do. But I want to be quite certain that I can change the person who governs me without having to shoot him. That is the essence of democracy. . . To me a country is not a democracy, whatever else it may be and whatever other virtues it may have, if you cannot change the Government by a perfectly peaceful method of putting your cross on a piece of paper.

With this definition, it is clear today that the inhabited world is tending to divide itself politically under two climates—democratic and undemocratic. There is the democratic area of countries in which the Government, that is to say the individuals constitutionally authorized to use force against the citizens, can be changed at short intervals by a process as peaceful as marking a paper or pulling a lever in secret. There is the undemocratic area of countries in which the Government cannot normally be changed save by force or threat of force, involving risk of bloodshed ; the shortest positive term for such a Government is ‘despotism’ whether of an individual or of a group.

That political division of the world between the two climates of democracy and despotism is of great and growing importance is obvious, as is the tendency of the main democratic and despotic countries to move always in opposite directions. There is a curious analogy in this to one of the things that I learned from my meteorological studies between the wars, of the broad division of the world barometrically between two areas, positive and negative ; when the barometer is relatively high over the positive area it is relatively low over the negative area ; within each area there is as a rule general

agreement.

The political division is not as simple geographically or as consistent as the meteorological one. There are democratic countries in every continent, and despotic countries in nearly every continent. And there are many capricious tendencies on both sides of the boundary. Some despotisms work habitually or occasionally with the democracies ; the latter are not always in the same camp on a particular issue. There are many varieties and degrees of despotism ; some tyrants seek to prescribe what their citizens shall read or hear or see or say ; others leave much freedom of speech and writing—so long as it does not threaten their power. There are as many varieties and degrees of democracy.

No excuse is needed for using the term democracy as I have used it here. The word etymologically means that power rests with the people ; since the people in any large community cannot exercise power directly, the only rational meaning of the word is that those who exercise power on behalf of the people should be subject to recall by the people. In practice the word democracy is seldom used rationally. It has become for most politicians a term of endearment for the institutions they prefer or of praise for any measures that they desire. But democracy and Utopia are two words, not one, with two vowels only and no consonants in common. And democracy contains nothing but equality : its sole reference is to power and control of power.

The leading democracies and the leading despotisms are now in unresolved conflict throughout the world. Which of the two political climates offers the best hope for mankind is not open to doubt. Power—ability to give orders enforced by sanctions—is necessary to keep wrong-doers in check and to ensure justice. But power, unless it is held as a terminable trust by the person wielding it, all but inevitably corrupts the person who

wields it. Despotism stands for interference with essential human freedoms, through fear that exercise of freedom may shorten its lease of power. Despotism in practice has been aggressive ; the man who enjoys ruling over 50,000,000 people finds it hard not to believe that he would get twice as much enjoyment if he had 100,000,000 subjects, and ten times as much out of 500,000,000. Aggressiveness is natural to despots, as is belief in national sovereignty—the anarchy that leads to war : the man who enjoys lasting power at home is less likely than the democratic governor to clip his own wings by surrendering part of his power to an authority for justice between nations. Aggressiveness of despots may not in the end prove inevitable ; they may become content to be cocks on their own dunghills. But dunghill contentment has not been shown hitherto. Aggressiveness was the mark of the German and Italian despotisms between the wars. Aggressiveness has been the mark of the major despotism that threatens freedom everywhere today.

That the democracies must be strong enough for war to be able to stop forcible spread of despotism to themselves is self-evident. But that is one side only of their task.

In the last days of July 1945 I received a letter from Gothenburg, from a gathering of progressive Swedish students, begging to be advised by me as to what was the task of intellectuals in the present condition of the world. Their letter was dated 26 July the day of my defeat at Berwick, and I sent them an answer from the heart : ‘The task of intellectuals in Sweden, as elsewhere, is to introduce reason and foresight into practical affairs. Only if it is governed by reason will democracy be sufficiently successful in practical affairs, to make certain of surviving.’

Democracy is better than despotism, offers the only hope

for mankind of freedom, of justice, and of peace. 'But is democracy, as we know it, good enough? A general election in any of the larger democracies today, in the U.S.A. or in Great Britain, in France or in Italy, is not conspicuously a feast of reason. If democracy is not all that nineteenth-century fancy used to paint, how should it be made better? Can it be made to do well enough to be sure of survival?

I cannot attempt the answers. But, having regard to Britain's internal revolutions since the beginning of my story, it may be worth while to name some of the problems illustrated by the story, and facing us today. We have to learn as a democracy to choose our governors wisely, by reason, not greed. We have in an economically flattened society to find men who will undertake public office in a public spirit, not for personal gain or glory; we must carry on the aristocratic tradition without the aristocrats.¹ We have to keep open the channels for new ideas of unknown men to reach and influence the temporary holders of power. We seem to have solved for the present the problem of full employment, but we have not solved two of the problems to which full employment in a free society gives rise—how to preserve the value of our money against endless rise of costs, wages and prices, and how without fear of unemployment to secure the maximum of output.

Democracy must be efficient in practical affairs, as efficient as the nearest despotism. Democracy must be democratic in substance, not only in form. This means that the process of choosing and changing holders of power shall be unaffected by privilege of established organization and wealth, that the holders of political power, when an election comes, shall compete with their opponents on equal terms. Power must not be used to prolong itself. Power, the stupid necessary mule, should

¹ Letter to Posterity, Broadcast of 30 December 1951.

have neither pride of ancestry nor hope of posterity. In the leading democracies today many special measures have been taken to secure this. But, at any risk of causing offence, a question must be asked about Britain. Is it consistent with democratic principle that organizations like the trade unions which have received special privileges for industrial work should become tied to a political party? Ought it to be difficult for an individual to earn his living by employment without contributing from his wages to the retention of power by one set of politicians rather than another? A one-party state in any form is the destruction of freedom.

Democracies need to look within. They must look without as well. They must, in one way or another, abandon and lead others to abandon any claim to absolute sovereignty—the claim to kill in one's own cause without selection or limit. . . If with our growing control over nature we could abolish war, we should be in Utopia. If we cannot abolish war, we shall plunge ever deeper into a hell of evil imagining and evil doing.

The world is an unhappy place. The picture of yesterday's hopeful collaboration in curing evils of want and disease and ignorance and squalor, as I have tried to draw it here, looks like a dream today.

At the close of the Napoleonic Wars, Shelley painted a picture of 'England in 1819', magnificently comprehensive in invective :

An old, mad, blind, despised, and dying King,—
 Princes, the dregs of their dull race, who flow
 Though public scorn,—mud from a muddy spring,—
 Rulers who neither see, nor feel, nor know,
 But leech-like to their fainting country cling,
 Till they drop, blind in blood, without a blow,—
 A people starved and stabbed in the un-tilled field,—
 An army, which liberticide and prey
 Makes as a two-edged sword to all who wield,—
 Golden and sanguine laws which tempt and slay;

Religion Christless, Godless,—a book sealed ;
A Senate,—Time's worst statute unrepealed,—
Are graves, from which a glorious Phantom may
Burst, to illumine our tempestuous day.

A new Shelley in 1953, would find equal ground for invective as wide as the world : in never-ending war ; in justice as the will of tyrants ; in the brutality which flows from the general cheapening of human life in war ; in use of men's highest gifts for more and more diabolic aims ; in systematic suppression of truth and freedom of thought and speech ; in the barriers to movement which shut men off from personal contact with their fellows ; in the nemesis by which those who rule by terror live always in terror for themselves :

An Ogpu which liberticide and prey
Makes as a two-edged sword to all who wield.

Between the two wars it seemed possible to attribute the troubles of the world in the main, not to bad intentions but to good intentions misdirected, so that what the world needed chiefly was more knowledge. I remember saying this to a congress of university students, in the city where I am writing today, as late as the spring of 1934. Today we face a grimmer picture, of power in the hands of men whose intentions, judged by any standard of respect for humanity, justice and freedom, are not good intentions but bad intentions.

But a new Shelley, like the old Shelley, would end on a note other than despair.

Men can be taught to hate but they are born into love and spend infancy and long childhood under loving care ; it cannot be inevitable that they should all forget what they learned in their most impressionable years. Some men are little more than brutes ; all men have the brute in them, are moved by fear and greed. But all men have in them what brutes have not—reason and speech and emotions other than fear and greed. All men have

capacity for religion—the sense of the unseen. If the religion of Christ could come to its own in the world, mass murder would become unthinkable.

The theme of my story returns at its end. Power as a means of getting things done appeals to that which men share with brutes, to fear and to greed ; power leads those who wield it to desire it for its own sake, not for the service it may render, and to seek its continuance in their own hands. Influence as a means of getting things done appeals to that which distinguishes men from brutes. The way out of the world's troubles today is to treat men as men, to enthrone influence over power, and to make power revocable.

The world today is a graveyard of millions, of men and women and children dead before their time. The world today looks like a graveyard in another sense—the burying-place of hopes for which so many gave their lives in war. But the human spirit does not die. From all these graves some day human kindness will return to humankind.

LORD BEVERIDGE

EFFORT AND ACHIEVEMENT

XVI

SIR FLUFF

THE STORY OF PENICILLIN

PROFESSOR Alexander Fleming, Director of Systematic Bacteriology at St Mary's Hospital, Paddington, was helping me on something I was writing about the progress of the war against germs. We had to meet late in the afternoon, when he could relax after a busy day. St Mary's is not only a teaching and treatment hospital; Sir Almroth Wright had made it a centre for the production and dispensing of vaccines, and this was the season of the common cold, when people were queuing up to get 'blunderbuss' shots of preparations of the cold germs...

The trouble that afternoon was that Fleming would insist on digressing. What was bothering me was the 'bacteriophage'. In the microscopic world, just as in the visible world around us, there are species which prey upon other species, on Dean Swift's principle that 'So, the Naturalists observe, a flea has smaller fleas that on him prey, and these have smaller fleas to bite 'em, and so proceed *ad infinitum*'. Bacteriophage, discovered in 1915, are parasites which destroy other germs, dissolve them, apparently. In other words, they are 'lytic agents'. Of course, I had to have 'lysis' explained to me. The professor turned to one of his 'germ farms', a glass-plate covered with gelatinous material on which, under a glass cover, swarms of bacteria were multiplying. He scraped a few germs off, put them in a test-tube, which he put into a beaker of hot water. Almost immediately, the murkiness disappeared; the tear had liquidated the germs. That is 'lysis'.

Tears, he explained, are very powerful germ-killers. Even in weak dilutions of tear, sensitive germs die. If

a germ gets on to the eye (which, although it is one of the most delicate parts of the body rarely gets infected) it is drowned in a tear-bath. It is obvious when you are told, because how otherwise could the eye escape the infiltration of the invisible mist of germs which surrounds us all the time ? Contrariwise, when the eye gets a piece of grit into it, the tears try to sluice the grit out and, wasting their substance on this hydraulic action, the germ-killing power becomes weaker until it cannot cope and the damaged eye becomes infected. Other secretions of the body have the same property—sweat, saliva, mucus in the nose and throat, and the gastric juices—and ten years before this conversation, Fleming had discovered the particular substance which he called 'lysozyme' and he could produce little ampoules of it, many times more powerful than tears.

'But if you really want to see an exciting case of lysis, look at this,' he said and he produced another agar-plate with germ-colonies breeding happily on the succulent gelatine 'pastures'. And there was a bit of mould, a whiskery affair like the fluff which grows on stale bread or cheese. I looked at it dutifully, but with some distaste, while Fleming showed how around it there was a clear moat separating it from the swarming germs.

'How interesting,' I said, insincerely and certainly without excitement, 'Now, about bacteriophage . . . ?' Fleming with, I suspect, the sigh of one whose best story misses fire, returned to commonplaces but, at the first cue, he was back on the subject of that mould. He showed me a flask with a large-sized version of it, like a furry, blue-green water-lily leaf, or a nauseating slice of grape-fruit. I fidgeted like a visitor who is asked by a doting parent to pass an opinion on a particularly ugly infant, and retreated on the bacteriophage again.

On the subject of curious behaviour, he said 'For instance, when that mould-spore got on to that plate . . .'

And he told me how one morning in September 1928, he had gone to the window edge where the shallow dishes containing the mould cultures were lying. He was cultivating staphylococci, those bacteria which make life so unpleasant for us in the shape of boils and so on. He glanced at the collection, discarding those which had been contaminated, and then he came on one which had a patch of mould on it, or, as you and I might say, had gone fusty. It looked like another spoiled plate, but a second glance before he discarded it showed that clear patch where the germs which covered the rest of the plate were obviously being dissolved.

'That was the sign of a pretty powerful germ-killer,' he said to me, and at that point I may have paused to wonder how one could interest the public in a piece of fluff which could kill germs, but it would only be a brief pause. When Fleming took off his overall and we packed up for the night, he had failed to convert yet another person to his mould.

I was to learn about penicillin the hard way—with a hollow needle thrust into my leg—while those 'staphs', raging through me as generalized septicaemia, were being liquidated by the extract from a direct descendant of that self-same mould at which I had looked so disrespectfully.

Nowadays, when penicillin is recognized as the world's greatest life-saver, that antic spore has become romantic. The discovery is described as 'the result of an accident'. Yes, and no. The incidental circumstances were accidental. It happened that that particular plate, which normally should have been kept closely covered to avoid contamination, had been exposed for microscopical examination. There are at least six hundred and fifty species of the moulds classified as 'Penicillia' and thousands of variants of which only a very few have the necessary qualities. There is no question that the odds

against a spore of this particular strain drifting in through that particular window and settling on that particular plate at that particular moment are millions to one. To that extent it was an accident and perhaps one can say it was an accident that Fleming should be the man concerned. But it was no accident that Alexander Fleming recognized the significance. His was a mind trained for such an eventuality . . .

Because his brother was a doctor, he thought he might better himself by taking up medicine. At the age of 20 (1901), he entered as a student at St Mary's Medical School and began an unbroken association with that institution. It was immediately apparent from his academic successes that he had found his vocation—not in medical practice, which he was never to take up but in medical science. At that time a colossus dominated St Mary's in the person of Sir Almroth Wright, the man who had introduced the method of vaccination against enteric fever in the Boer War. He was put on the stage by Shaw in *The Doctor's Dilemma* as 'Sir Colenso Ridgeon'. He had discovered in 1903, 'opsonin', a substance in the blood which enables the phagocytes (the white blood cells), to resist and devour bacteria. Upon the degree of the opsonin factor depends the capacity of the body to overcome infection. He showed how the production of this opsonin could be stimulated by taking some of the patient's own germs, cultivating them in the laboratory, killing them and then injecting the bacterial corpses into the patient's body which would immediately start manufacturing the factor. Thus the extended practice of inoculation grew up which was to stem the incidence of mass disease.

Naturally Wright did not 'get across' his opsonic gospel without bitter controversy, and the very young Scots student emerged as a strong protagonist. Abandoning the idea of general practice, he became an assistant

to Sir Almroth Wright. That partnership continued until Wright's death in 1947, and, until the world-recognition of his discovery of penicillin, Fleming was a rather planetary figure.

He was a superb laboratory-worker. The techniques he developed are classical in modern laboratory practice and his knowledge of germ-behaviour and body-reactions to them unsurpassed . . .

It was Fleming's work on lysozyme and all the patient experiment and study which had gone into it which made him recognize what that clear patch meant; anyone without his peculiar experience would have missed it. His own immediate colleagues did not attach much importance to it when their attention was drawn to it and it was left to Fleming to pursue it. He did. He cultivated the spore and developed the moulds into pure cultures. Then with a tiny platinum loop he would 'lasso' a few germs from one of his many colonies and streak them across the agarjelly on which the mould was growing. He would draw them in lines from the edge of the mould to the edge of the dish. He used staphylococci, streptococci, diphtheria bacilli, anthrax, typhoid and bacillus coli. The result was—to him—exciting, because while the germs of typhoid and b. coli continued in unbroken lines up to the rim of the mould, the others could not survive in its neighbourhood.

Then he set out to find out just what specific variety of penicillium this was. And there he was a victim of a mistake by the mycologist, or mould expert, whom he consulted. It was identified as *Penicillium Rebrum*—'red penicillium'—instead of *Penicillium Notatum* and this was to lead to serious difficulties, differences and delays. It was as though the Scotland Yard Criminal Record Office, asked for the file of a suspected drug-pedlar, had turned up instead the dossier of his cousin, a 'con-man'; the C.I.D. would get their trails pretty mixed.

Fleming, on his own, working with his own particular specimen, cultivated it in a broth. This is a nutrient mixture calculated to build bonny fungi. He found that after the fungus had grown for a few days, the broth was capable of preventing the growth of a number of disease-causing germs, some of them when the broth had been watered down eight hundred times. When it was injected into animals it did not cause any bad reactions. Fleming noted that this was the first antiseptic which he had encountered which was considerably more harmful to germs than to tissue cells. He suggested that the broth might be a useful dressing applied locally to infected tissues . . .

Why 'penicillin'? Because when the spore germinates it produces a brush-like tuft which, multiplied, forms that felt-like fluffiness which is so distasteful on mouldy food-stuffs, *Penicillus* is the Latin for 'brush' or 'pencil' or 'little tail'.

Before 1931, Fleming had used unconcentrated cultures as local applications to carbuncles, sinuses and so on. The results were quite useful but certainly not spectacular. He did not have the facilities to concentrate the tricky substance. Without highly-qualified chemical assistance, he could not progress further. In his own department it was used as a laboratory instrument for routine tasks like scavenging cultures of influenza germs. *Pfeiffer's Bacillus* which occurs in influenza is resistant to penicillin but kindred germs are not, so that penicillin even in the form of a crude broth would kill off the hangers-on and leave the pure colony of Pf. B.'s. But Fleming never had any doubt about the human implications of penicillin and like the fond father of a promising infant, or a gardener with a hopeful marrow, he kept returning to the subject until his colleagues were inclined to say 'Oh, lor', Alex and his penicillin again!'

Scepticism was not removed by the efforts of Professor

Harold Raistrick, the eminent biochemist at the London School of Hygiene and Tropical Medicine, who in 1930 obtained a culture of Fleming's mould. Fleming was a specialized bacteriologist, studying germs and their habits and weaknesses ; Raistrick was a biochemist, studying the chemistry of the living processes . . .

Bacteriologists had learned a great deal about how germs caused disease ; Raistrick's assignment was to find out why. This took him up a bridle-path from Pasteur's cross-roads, the study of moulds, as an elementary form of life which might yield information about the disease organisms. The detective was using 'copper's narks' to give him the low-down on the underworld.

By the time he took the new Chair of Biochemistry at the London School of Hygiene, in 1929, Raistrick had isolated sixteen different chemical substances, hitherto unknown to chemistry, from moulds. When he came to examine Fleming's specimen it was with a wealth of experience. With him was Dr P. W. Clutterbuck, a chemist, and Dr R. Lovell, a bacteriologist. It was Raistrick who first became suspicious of 'Red' penicillium. He thought that it had been wrongly identified and his guess was another type *Chrysogenum*, discovered by Dr Thom, an American mould-specialist. He sent it to Thom, who after extensive tests, found it was neither *Rubrum* nor *Chrysogenum* but another branch of the family, 'notatum' which had been discovered in decaying hyssop by Westling, a Scandinavian scientist . . .

Raistrick carried out systematic experiments with both *Notatum* and *Chrysogenum*. He and Clutterbuck proved how extremely difficult penicillin was to manipulate chemically ; it was like trying to pick up quick-silver with a fork. But the team went a long way (as we now know with wisdom after the event) before the experiments were abandoned. J. H. V. Charles, the mycologist, or mould-specialist, who was working with them was

knocked down and killed by a bus, at a critical stage. Then Dr Lovell left the London School of Hygiene and Tropical Medicine for another appointment and Raistrick was without a bacteriologist. As Fleming said afterwards 'I had failed to advance further for the want of adequate chemical help. Raistrick and his associates had lacked bacteriological co-operation, so the problem of effective concentration of penicillin remained unsolved.' The distance which separated the bacteriologist at St Mary's, Paddington from the biochemist at the London School of Hygiene at Euston is barely two miles. It took seven years to travel that distance, making a detour via Oxford.

In the meantime, there was another diversion—up another blind-alley. This time it was in the United States and the frustrated explorer was Dr Roger D. Reid of the State College of Pennsylvania, who in 1930 was impressed by Fleming's published work. He not only tried out Fleming's strain of *Penicillium Notatum* which he obtained from Dr Thom, he worked through a whole range of penicillia—rounded up all the relatives of the suspect. But he was not content with that; he attacked another mould species, *Aspergillus*. . .

Altogether he laboriously examined the characteristics of 23 moulds before he found that the penicillin effusion was a peculiarity of *Penicillium Notatum*. Like Raistrick, on whose experience he worked, he tried every conceivable device to make the mould yield a pure and consistent supply of the substance. He discovered a whole series of new enzymes, or ferments, in the process, but not a satisfactory penicillin for use in treatment of disease.

Nine years after Fleming's original discovery (1938), the search for the active factor was resumed at Oxford. This was the decisive stage and the three-way sharing of the Nobel Prize for penicillin between Fleming, Florey and Chain is the formal recognition that Fleming's life-saving mould might have gone on mouldering but

for the intervention of the two Oxford men, the Professor of Pathology and the brilliant biochemist, Chain, whom Hitler had bequeathed to us.

Howard Florey is a forthright Australian from Adelaide, born in 1898. It might be said of him that he was born with a test-tube in his mouth, for nothing ever stood between him and the chemistry which was his life's interest. Even when he took his medical degree at Adelaide University, it was with the determination never to practise, unlike the fellow-student, Ethel Reed, whom he later married and who was equally determined to make her own career as a clinician. She comes into the story of penicillin as the doctor who first tried it out on human patients. Achieving a Rhodes Scholarship, he moved to Magdalen College, Oxford, where he read physiology, the study of the living processes, and then moved to Cambridge where he read pathology, the study of the processes of disease.

There was no doubt about Florey's abilities. As one of his friends said 'He collected degrees as though they were cigarette cards.'

His path first crossed that of Fleming's in 1929 when he became interested in the latter's discovery of lysozyme, that property of the not-so-idle tears. He decided to pursue this as a subject of research, which he did, at Cambridge, and afterwards at Sheffield, where he moved as Professor of Pathology. While he was there, he made a passing acquaintance with penicillin through a former student of Fleming's, Dr C. G. Paine, working in Sheffield, who had tried to turn his master's discovery to practical account. He got a specimen of the mould from Fleming and cultured it. He then used filtrates of the 'broth' on which it fed and applied them to some cases of children with eyes infected with gonorrhœa: they were effective but the method of obtaining the penicillin filtrates were so unreliable and the ministrations of it in crude state

so unpredictable that Paine had, like so many others, given up the effort. Florey was familiar with these attempts and it is a tribute to his constancy and objectivity as a scientist, that, when he next encountered penicillin he did not allow the abortive Sheffield experiments to discourage him from further investigations.

When Florey moved to the major appointment of Professor of Pathology, at Oxford, he took lysozyme with him to the Sir William Dunn Laboratory and, under his direction, it was produced in pure state in 1937 and crystallized at the Dyson-Perrins Laboratory next door by Dr E. P. Abrahams, who was to play a conspicuous part in the isolation of penicillin.

The Pathological Laboratory, at Oxford, embraces both bacteriology and biochemistry (a noteworthy fact when one remembers that Fleming failed for want of a biochemist and Raistrick failed for want of a bacteriologist). For the chemical side, Florey recruited Ernest Chain, who had added a Cambridge Ph.D. to his German degree.

Chain is an engaging character—fiery, volatile, vivacious in conversation and personal relations, yet cool, persistent and detached in scientific inquiry. He looks like some one cast for the role of Einstein as a young man, with the same shock of unruly hair and moustache. Like Einstein he is an accomplished musician who might have excelled in an artistic career as he has done in his science.

As the biochemist, he was pursuing his Professor's interest in lysozyme and he was looking for other possible agents which could similarly dissolve germs. His intensive search of scientific literature in the Radcliffe Library brought him fortuitously into touch with Fleming's paper of 1929. It was not what he was looking for and it was just a coincidence that Fleming's lysozyme had led him to Fleming's penicillin. He had never heard of it before. What interested him as a biochemist

was the fact that penicillin apparently affected Gram-positive germs.

Gram was a Danish physician of the late nineteenth century who developed a method of staining germs. A colour is applied and then washed away with alcohol. Some germs retain the stain and others do not. Those which do are called Gram-positive and the others Gram-negative. This characteristic of the range of germs in which penicillin could be effective was later to be a sure indication of the diseases which it could cure.

With little more than this to excite his curiosity, Chain followed the trail. When he discovered Raistrick's accounts of how he had managed to grow the mould and successfully extract the exudation from the chemical medium on which it fed and then had been balked, he was tempted, knowing Raistrick's brilliance as a mould specialist, to dismiss any further attempts as futile. But science is not like case-law—you do not form verdicts on the judgements of others—so Chain was still curious.

He went to the Laboratory of Professor Dreyer on the off-chance that there might be a specimen of *Penicillium Notatum*. There was—a direct descendant of that bit of fluff I had seen on Fleming's germ-plate. How it had been obtained from St Mary's Hospital no one knows, but it shows the value of the distribution of type-cultures, that is, the distribution around appropriate institutions of master-species of moulds, germs, etc. That is something which the United Nations Educational, Scientific and Cultural Organization is now trying to do on a world-scale.

So Chain decided to take up the story where Raistrick had left it off and in that he was abetted by Florey, who took over the biological work while Chain concerned himself with the chemical aspects. It was to be an entirely academic pursuit, with no premonition that it could produce direct practical results . . .

The work of Raistrick was reproduced and the anti-bacterial properties of the effusion of the mould were confirmed. But one of the first things to be done was to find a simple test by which the potency of any given amount of the extract could be judged. That gave us the 'Oxford Unit' and a technique by which a ring is placed on the germ-culture plate and filled with the fixed amount of penicillin. A clear circular halo appears around the ring like a moat separating it from the flourishing colonies of germs. The halo indicates that germs are unable to grow and the diameter of the halo indicates the potency of the fluid.

Eventually a pinch of brown powder rewarded the combined efforts of the researchers. It was the result of laborious experiments and modifications of the extraction processes but it was a fairly stable salt and so powerful that they first imagined that they had got the pure extract. One part in 1,000,000th of the preparation could inhibit the growth of staphylococci and even less could stop the gonococci. Yet these first salts contained less than 2 per cent of the active properties of penicillin and today what we use is over 90 per cent pure. That is a measure of the incredible power of this drug.

There was no doubt about the power which it exercised on germ-cultures, but it still had to be tested on living things. In May 1940, the first extracts were injected into mice infected with streptococci. The amounts available were scanty. Florey's first dose was less than one-hundredth of a cubic centimetre of the salt but the effects on the sick animals were conclusive—disease was definitely arrested. From that, the tests were extended, not very lavishly but most rewardingly because they showed not only that it counteracted the disease but that it was a true 'systematic chemotherapeutic agent' which means that, injected into the blood-stream it would seek out a distant seat of infection (say a boil)

and destroy the localized germs without any harm of any kind to the animal. It was the first proof that penicillin is the most beneficent of all drugs because it is quite harmless in any amounts.

The war was now raging and this new healer was urgently needed for the Forces, but before the urgent tests on human beings could begin the drug had to be available in bigger quantities.

I have seen the early apparatus of 'mass-production' at the Oxford Laboratory. It consisted of a set of milk churns, a dog bath, a stirrup pump, and a milk-cooler borrowed from a dairy.

The moulds were grown in milk bottles and the broth was brewed by a firm in the East End of London (then being heavily blitzed) and transported to Oxford in milk churns. But gradually enough supplies were hoarded to make the human trials at the Radcliffe Infirmary, Oxford.

The first trial was a desperate one—would the new drug kill rather than cure? Or would it, at least, have bad effects on the patient? The first case selected had no infection likely to respond to the curative powers of the drug but was suffering from an inoperable cancer with no hope of living long. There was a sharp rise in temperature after the injection and the same thing happened with a second patient. There was no doubt that the preparation, as it then existed, was liable to produce a fever. Fortunately, it was quickly found that the agent which caused this was not necessary to the germ-killing properties of the drug and could be removed.

The next thing, once the drug had been made safe, was to try it on likely cases, instead of hopeless ones. On 12 February 1941, the first curative attempt was made on a police constable who had been admitted in the previous October with generalized blood-poisoning from a dastardly alliance between staphylococci and streptococci. The sulpha drugs had been tried but unsuccess-

fully and he was 'pretty far through'; if penicillin could not save him nothing would.

They gave him 200/1,000ths of a gramme as his first dose, with 100/1,000ths of a gramme every three hours afterwards. The improvement was striking and immediate. The constable had taken a turn for the better. Two days later he was still making good progress. Then after days, the supplies gave out. The patient relapsed and eventually died . . .

The next case, this time with a temporary success, was a boy of fifteen with an infection of the hip-bone. But four weeks later there was a recurrence; the penicillin had not sluiced all the germs from the body.

Those two cases and a series of successes confirmed the laboratory findings. The only reservation was the quantity of the drug which was required, because penicillin was rapidly excreted by the body, before its job was properly done. This was overcome by a drip-method by which instead of injecting the whole dose at once and repeating every three hours, the drug is allowed to drip constantly, through a hollow needle, into the muscle. Today, with abundant supplies, with more powerful forms and with slower acting penicillin, patients can get relief even when, like the policeman, their systems are full of raging germs.

That struggle for supplies went on all through 1941 and 1942. On 6 August 1942, Fleming handled for the first time the yellow powder which had eluded him since 1929.

A personal friend was dying of meningitis, caused by a germ which Fleming himself had shown was susceptible to penicillin. He asked Florey for a supply of the drug. Florey himself took the whole of his stock to St Mary's and advised on treatment, from his accumulated experience. The patient was assuredly dying and that within a matter of hours.

For five days, Fleming ministered to his friend,

injecting the penicillin into the muscle. The patient rallied within the first twenty-four hours and his temperature dropped to normal. Then Fleming made a departure in the treatment and injected the drug into the spine, so that it might act directly on the infected part of the brain. It was the first time spinal injection had been tried ; and it was effective.

On 28 August, three weeks after he had been given up for dead, the patient was allowed up. A month later he left St Mary's completely cured.

Until that time, the researches and production had been going on as a research-project financed partly by the Medical Research Council, partly by the Rockefeller Foundation and partly by the Nuffield Trust. With the testimony of his friend's life as proof of the 'miracle' which started with that visitation of a piece of fluff, Fleming went to see his friend, Sir Andrew Duncan, the Minister of Supply. They were both members of the Ayrshire Society, one of those bodies in which exiled Scots contrive to cling together in alien London. Duncan listened and acted. He called a meeting of all the experts and from it emerged the Penicillin Committee under the chairmanship of Sir Henry Dale. And behind it were the resources of the British Government and, presently, of the U.S. Government. Penicillin was a major war-effort.

RITCHIE CALDER

XVII

NANGA PARBAT

The Solo Climb to the Summit

I WILL now quote Hermann Buhl's account of the events of 3 July:

'As I had been quite unable to sleep I was glad when it was 1 o'clock and time to get up. The storm had abated somewhat but it was still pitch-dark. Otto was well tucked into his sleeping-bag and seemed oblivious to everything. He did not stir although I made a terrific clatter as I rooted around in the tent, brewed tea, dressed and packed my rucksack. Several times I urged him to get up, but he kept saying that it was too early and that yesterday I had said we would rise at 3 o'clock. I reminded him that we must make the fullest possible use of the day ahead of us and that we should be glad later on of every minute we gained now. I added that in any case I should be setting off at two and that if he were not ready I should have to go on alone. For the time being I packed everything necessary into my own rucksack which made it quite a weight.

'Eventually Otto emerged from his chrysalis. I now thought that if I went on ahead and made the trial Otto would easily overtake me, and so that I should not have to carry everything myself I left some of the stuff behind for him, among other things Kuno's bacon, which was to be the summit ration. I was later to regret this bitterly. At 2-30 a.m. I crawled out of the tent and started on my way.

'The night was star-lit and the crescent moon threw her silvery light along the ridge which stretched away ahead of me. It was calm and cold. I put on everything I could. Across a hard steep spur of compressed snow

I regained the top of the ridge. Here on the spine the going was treacherous. I buckled on my crampons and felt able to move with greater freedom. In thrilling, soaring leaps the ridge rose steeply before me. To the right giant snow slopes, broken by icy barriers, plunged to the plateau above Camp II; to the left my way was skirted the dark rock formations, while beyond the eye was lost in unimaginable depths. A biting wind came up from the south and forced me on to the Rakhiot side. At the start of the traverse to the Silver Saddle I paused for a rest. It was 5 a.m. and behind the Karakoram the sun was rising in golden splendour. Caught in the brilliance of the first rays an undulating sea of summits greeted me: beautiful Chogori, trapezoidal Masherbrum, the bishop's mitre of Rakaposhi, the black granite of the Mustag Tower. In the valleys a fine mist hovered, the best of weather portents. Blissfully I basked in the early sunshine as I took my morning refreshment. Otto was still a good way behind me—I estimated it at an hour's climb—but I never doubted for a moment that he would eventually catch up with me.

'The *Firn* was hard and in places patches of bare, bluish iridescent ice came to the surface. Distances were most deceptive. The rocks of Silver Crag stubbornly refused to come any nearer and another two hours had passed before I was standing on the Silver Saddle, at the edge of the great *Firn* plateau. How often had I dreamed of this moment!

'My altimeter registered 24,275 feet. So far I had made pretty good time. I was not terribly affected by the height. I was having to take two breaths for each step. After another short rest I continued on my way. The *Firn* plateau went on for about two miles, at first rising gently but later inclining steeply up to the Fore-Summit; the difference in height amounted to about 1,500 feet.

'The *Firn* had been ploughed by the high winds into undulations three feet high. This meant a perpetual clambering up and down which greatly slowed down progress. At 25,000 feet I seemed to reach the limit of my capacity. Suddenly my body felt paralysed, my lungs could not expand, and every step demanded tremendous effort. My pauses for rest became more and more frequent, and I was acutely conscious of the thinness of the air.

'Otto did not seem to be faring any better. It was quite some time before I caught sight of his figure on the Silver Saddle advancing slowly, silhouetted against the skyline. I saw him stop and then sink down. Otto had given up. This in itself was more or less immaterial to me but with my tongue parched and my stomach rumbling I could not but think of the bacon in Otto's rucksack which was now lost to me.

'On the Silver Plateau the sun was scorching, the air was terribly dry and not a breath of wind was stirring. After each rest I had to force myself to get up and carry on, so great was the temptation to go on lying where I was. The steep rise to the Fore-Summit seemed to get not one whit nearer although I had now been pegging away for hours. My idea that I should reach the summit by midday was completely set at naught. I now directed my steps over to the extreme edge of the plateau where it dropped away into the southern face. I hoped that a cool breeze might be coming up from the south. But here too the air was perfectly still.

'The weight of my rucksack became intolerable and when at length I reached the foot of the rise to the Fore-Summit I took it off and left it behind. I reckoned on being back there before nightfall. I tied my anorak round my waist by the sleeves, having first stuffed the summit flag, my camera, spare gloves and drinking flask in the pockets. I also stowed away some Pervitin, and

also Padutin in case of frost-bite, picked up my ice-axe and continued on my way.

'The going was now decidedly easier; the pauses became less frequent and, summoning all my will-power I tracked along below the Fore-Summit to the right in the direction of a declivity between the Fore-Summit and the Diamir depression. Once more the distance proved to be greater than it had appeared. I began to have doubts whether I should be able to keep going long enough, but in any case the Fore-Summit was within my grasp. It just missed being in the 26,000-feet class, but anyhow mine would be the first ascent. The Pervitin I was carrying gave me confidence; I felt I could rely on it in case of emergency. Just 300 feet below the Fore-Summit I set foot on the above-mentioned declivity.'

Buhl had now reached the highest point hitherto attained. This was just about where Aschenbrenner and Schneider had stood when in 1934 they had climbed to within 150 feet of the Fore-Summit. It was also roughly the point where all possible ascent routes converged. Mummery in 1895 had aimed at the Bazhin Gap, and the route over the North Summit reconnoitred by Harrer, Aufschnaiter, and Lobenhoffer in 1939 would also run into the Rakhiot route at approximately this point. From this juncture Schneider had conjectured that the route to the summit continued by a descent to the snowfield below the Bazhin Gap and then up the summit shoulder either by a central rib on its north-eastern flank or by a traverse of the main east ridge from the Bazhin Gap. Buhl decided to traverse direct from the declivity towards the Bazhin Gap and the main east ridge, without descending to the snowfield below. His narrative continues:

'My traverse across the rocks to the Bazhin Gap took me over snow and ice, deeply terraced and strewn with boulders. It was already 2 p.m. A steep, rocky ridge

crowded with snow-towers, vertical pitches of sharp-edged granite, badly exposed cornices and steep flanks of compressed snow, now lay between me and the shoulder. Assessing all these difficulties I remembered the Pervitin and took two tablets. I should need every ounce of energy and will-power I could muster. I knew that the drug would remain effective for only six to seven hours and that I must reach some resting place by that time.

'A steep ridge of compressed snow led to the foot of the rocks. At this point the mountain-face plunged in a vertical drop of several miles direct from the ridge. Once or twice I looked through crevices which had formed between the rock and the ice into the gaping void below. Never had I seen such an abyss.

'I laboured doggedly on from one rise to the next, treating every single pitch as an objective in itself. When once more the summit revealed itself far above me I simply could not realize that that was my ultimate objective. Finally I had to scale a thirty-foot overhang which obstructed the access to a couloir which in turn led farther up. At the end of the ridge, which was in parts very severe, a massive and upright gendarme still barred the way. It was impossible to climb over it so I had somehow to circumvent it. The rock was very brittle and called for extreme care. The last rise before the shoulder consisted of a very steep and long slope of hard compressed snow. This presented no special problem but it demanded great exertion. With my last reserves of energy I managed to work myself up the few feet which still separated me from the ridge. At 6 p.m. I stood at last on the shoulder at an altitude of about 26,250 feet.

'I felt that I had reached the limit of my endurance.

'Naturally, as a climber, I realized that I was now on the last lap to the summit. But it might just as well

have been any other summit in my native Tyrol. This may seem incredible but that was how I felt. I was simply not conscious of the fact that I was at that moment at grips with our own Nanga Parbat, an un-trodden peak of over 25,000 feet, the summit to which no less than seven expeditions had gone forth, the mountain which had claimed so many lives . . .

'I took a last gulp of coca-tea which offered some fleeting refreshment. Then I traversed into the northern face. Steep and rough, a tumbled mass of boulders now led up to the summit, still about 300 feet above me. I now left the ski-sticks behind and—I could do it in no other way—scrambled up on all fours.¹ Suddenly I realized that I could go no higher . . . I was on the summit.

'I was not, I must confess, at the time fully conscious of the significance of that moment, nor did I have any feeling of elation at my victory. I simply felt relieved to be on top and to know that all the sweat and toil of the ascent were behind me.

'It was about 7 p.m. I at once took the small Tyrolean pennant from the pocket of my anorak, tied it to my ice-axe, took a photograph and tucked the pennant away again to take back to my club. Then I got out the flag of the country whose guests we were, fastened it to my ice-axe, changed films and took some more photographs—down towards Rakhiot Park, towards the Fore-Summit, the Plateau and the Silver Saddle. My eye scanned the three-mile drop into the Rupal valley where the setting sun was throwing the mighty shadow of the mountain on

¹ Schneider had given warning that the climb to the shoulder, while quite within the bounds of possibility, might well prove to be technically the most difficult section of the whole ascent, but had declared that the stretch from the shoulder to the summit appeared to be a broad and easy rise negotiable by anything from 'a handcart to a small motor-car'. The experience of Hillary and Tensing on Everest was the reverse of Buhl's. The summit was presumed to be rocky but they found it was a smooth, gentle, snow-rise.

which I stood far out into the land. I looked all round me, eastward into the Himalaya, northward to the Karakoram with the Pamirs and the Hindukush adjoining further west. To the south I could see over and beyond many 16,000-feet peaks.

'It was 7-10 p.m. when I left the summit pyramid. The sun was just disappearing on the horizon, and although the rocks still held some of the heat of the day, it immediately became very cold. The ridge seemed to me to be too difficult and dangerous for the purposes of descent, so I thought of trying to get down across the *Firn* flank facing the Diamir side. Unaccountably I had left my ice-axe on the summit so I had only the two ski-sticks with which to keep my balance. This carelessness might well have proved to be my undoing, for I was standing right in the middle of the traverse when suddenly my right crampon slipped off my boot. I just managed to grab it in time but the strap went overboard.

'I was left like a stork standing on the smooth hard surface on one crampon, supporting myself on the two ski-sticks and without an idea as to how I should extricate myself. With extreme caution I finally succeeded in reaching some rocky ground.

When I had dropped about 450 feet from the summit, night suddenly closed in on me. Some distance away I could just see the outline of a large rock and I now groped my way towards it. Supporting my body against the mountainside which inclined at an angle of about 50° , I spent the night standing on this rock.

'I thought longingly of my bivouac equipment which was waiting for me in my rucksack at the foot of the Fore-Summit. I only had my thin pullover on; my heavy one, the tent-sack and my other spare clothing were all in the rucksack.

'Finally, as Karl had been at great pains to impress on me what I should do in case of an emergency bivouac,

I took a few pills of Padutin.

'It was 9 p.m. when the darkness forced me to bivouac against the mountain, standing on that unsteady chunk of rock. To the west the last light of day was gradually being extinguished. My rest did me good, even if I was standing all the time. The hours passed surprisingly quickly. I dozed, nodding a little nod and again, then jerking myself upright once more. Then a cold shiver would run through me. But it was all quite bearable. The only trouble was that my feet gradually lost all feeling, for I could not keep them moving sufficiently. It was not until nearly 2 a.m. that the moon appeared. Its silvery crescent hung just above the summit, lighting up miraculously the slopes of the North and Fore-Summits below me and casting its light right over to the Bazhin Gap. But I was not in its floodlit path; the flank remained in shadow. So I had to go on waiting until dawn should break.

'As the morning of July 4 approached it became increasingly cold. On the eastern horizon a pale streak showed in the sky. But it was still too dark for climbing and it was not until 4 p.m. that I was able to continue my descent. I had no feeling whatsoever in my feet, my boots were frozen stiff and the rubber soles were glazed with ice. All this called for extreme care. Every step had to be well considered even where the gradient was not particularly steep; the smallest error of judgement could have been fatal.

'If I did only one slight slip in the snow this took so much out of me that I needed minutes to collect myself again. After overcoming a difficult pitch which once again left me completely out of breath I stood at last on the steep iron-hard snowfield which led up to the Bazhin Gap. At around midday I eventually reached the rocks at the Diamir depression. As these offered but very slight handholds I took off both pairs of gloves and

stuffed them in my pockets. When later I went to put them on again I found that one pair was missing. I have no idea what could have happened to them.

'Throughout this day I had the feeling that I was not alone, that someone was accompanying me. Many times I found myself in the act of turning round to address my companion, and when I was looking for my gloves he told me that I had lost them. It was only when I looked round that I realized that I was alone.

'The sun beat down without mercy. I took a rest and fell asleep for a short time. I awoke feeling ravenously hungry and with a raging thirst. I was so absolutely parched that I was obsessed with the thought of drinking. Now and again I heard voices above me and hoped it might be Hans or Walter coming to meet me with a flask of tea. But no one came. I continued to drag myself on with what help I could get from the ski-sticks, to the Diamir depression which lay about 100 feet up. It seemed quite incredible now, that only the day before I had been able to climb to the summit.

'At last I reached the Diamir depression. Before me lay once more the vast sweep of the Silver Plateau. I could no longer swallow nor speak. Blood-stained slaver oozed from my mouth. I longed to get at my rucksack, for hunger was torturing me no less than thirst. I stumbled about among the hard furrows. It was some time before I could locate the rucksack, then finally I fell down beside it. I could not swallow dry food, but I made myself a wonderfully refreshing concoction of Dextro-energen and snow and after a prolonged rest began to feel better again. Far away on the Silver Saddle I saw two specks. Oh, the joy of it! Someone was coming! I heard voices too, calling my name.

'But what was wrong? The two specks remained static. There was no movement in them. Then I realized that they were rocks. How bitter, how painful was this

disillusion! My rests became more and more frequent, the pauses ever longer. I would struggle along for twenty or thirty yards then once more would I be fettered and held in total collapse. Two to three steps demanded ten rapid gasps for breath, then twenty, then still more, until eventually I could go on no longer. Then would follow another long rest, and then the agony would start all over again.

'In this fashion I reached the lowest point of the plateau, I was on the very brink of despair as I floundered among the petrified waves of this vast expanse of fluted Firn.'

'The counter-gradient to the Silver Saddle seemed endless. I now resorted once more to Pervitin. Whatever reserves of energy were left must now be mobilized, otherwise I should be finished.'

'A 5-30 p.m. I stood at last on the Silver Saddle and, looking down, saw two men standing near the Moor's Head. The sight of them gave me fresh impetus and as though buoyed up anew by some secret force I went ahead with greater ease.'

As Buhl staggered and swayed down the last few feet of the ridge he fell into the arms of Hans Ertl who had gone up to meet him. He looked aged by twenty years. His face desiccated and deeply lined, bore the imprint of intolerable suffering. From his lips fell the words: 'Yesterday was the finest day of my life.' Although torn with grief at the sight of his friend's agony, Ertl filmed Buhl's last steps to the tent and so put on permanent record the final moments of this unique adventure.

KARL HERRLIGKOFFER

SCIENCE AND PHILOSOPHY

XVIII

SCIENCE AND RELIGION

i

DURING the last century, and part of the one before, it was widely held that there was an unreconcilable conflict between knowledge and belief. The opinion prevailed among advanced minds that it was time that belief should be replaced increasingly by knowledge ; belief that did not itself rest on knowledge was superstition, and as such had to be opposed. According to this conception, the sole function of education was to open the way to thinking and knowing, and the school, as the outstanding organ for the people's education, must serve that end exclusively.

One will probably find but rarely, if at all, the rationalistic standpoint expressed in such crass form ; for any sensible man would see at once how one-sided is such a statement of the position. But it is just as well to state a thesis starkly and nakedly, if one wants to clear up one's mind as to its nature.

It is true that convictions can best be supported with experience and clear thinking. On this point one must agree unreservedly with the extreme rationalist. The weak point of his conception is, however, this, that those convictions which are necessary and determinant for our conduct and judgements, cannot be found solely along this solid scientific way.

For the scientific method can teach us nothing else beyond how facts are related to, and conditioned by, each other. The aspiration toward such objective knowledge belongs to the highest of which man is capable, and you will certainly not suspect me of wishing to belittle the achievements and the heroic efforts of man in this sphere. Yet it is equally clear that knowledge

of what *is* does not open the door directly to what *should be*. One can have the clearest and most complete knowledge of what *is*, and yet not be able to deduct from that what should be the *goal* of our human aspirations. Objective knowledge provides us with powerful instruments for the achievements of certain ends, but the ultimate goal itself and the longing to reach it must come from another source. And it is hardly necessary to argue for the view that our existence and our activity acquire meaning only by the setting up of such a goal and of corresponding values. The knowledge of truth as such is wonderful, but it is so little capable of acting as a guide that it cannot prove even the justification and the value of the aspiration towards that very knowledge of truth. Here we face, therefore, the limits of the purely rational conception of our existence.

But it must not be assumed that intelligent thinking can play no part in the formation of the goal and of ethical judgements. When someone realizes that for the achievement of an end certain means would be useful, the means itself becomes thereby an end. Intelligence makes clear to us the interrelation of means and ends. But mere thinking cannot give us a sense of the ultimate and fundamental ends. To make clear these fundamental ends and valuations, and to set them fast in the emotional life of the individual, seems to me precisely the most important function which religion has to perform in the social life of man. And if one asks whence derives the authority of such fundamental ends, since they cannot be stated and justified merely by reason, one can only answer: they exist in a healthy society as powerful traditions, which act upon the conduct and aspirations and judgements of the individuals; they are there, that is, as something living, without its being necessary to find justification for their existence. They come into being not through demonstration but through revelation,

through the medium of powerful personalities. One must not attempt to justify them, but rather to sense their nature simply and clearly.

The highest principles for our aspirations and judgments are given to us in the Jewish-Christian religious tradition. It is a very high goal which, with our weak powers, we can reach only very inadequately, but which gives a sure foundation to our aspirations and valuations. If one were to take that goal out of its religious form and look merely at its purely human side, one might state it perhaps thus: free and responsible development of the individual, so that he may place his powers freely and gladly in the service of all mankind.

There is no room in this for the divinization of a nation, of a class, let alone of an individual. Are we not all children of one Father, as it is said in religious language? Indeed, even the divinization of humanity, as an abstract totality, would not be in the spirit of that ideal. It is only to the individual that a soul is given. And the high destiny of the individual is to serve rather than to rule, or to impose himself in any other way.

If one looks at the substance rather than at the form, then one can take these words as expressing also the fundamental democratic position. The true democrat can worship his nation as little as can the man who is religious, in our sense of the term.

What, then, in all this, is the function of education and of the school? They should help the young person to grow up in such a spirit that these fundamental principles should be to him as the air which he breathes. Teaching alone cannot do that.

If one holds these high principles clearly before one's eyes, and compares them with the life and spirit of our times, then it appears glaringly that civilized mankind finds itself at present in grave danger. In the totalitarian states it is the rulers themselves who strive actually to

destroy that spirit of humanity. In less threatened parts it is nationalism and intolerance, as well as the oppression of the individuals by economic means, which threaten to choke these most precious traditions.

A realization of how great is the danger is spreading, however, among thinking people, and there is much search for means with which to meet the danger—means in the field of national and international politics, of legislation, of organization in general. Such efforts are, no doubt, greatly needed. Yet the ancients knew something which we seem to have forgotten. All means prove but a blunt instrument, if they have not behind them a living spirit. But if the longing for the achievement of the goal is powerfully alive within us, then shall we not lack the strength to find the means for reaching the goal and for translating it into deeds.

ii

It would not be difficult to come to an agreement as to what we understand by science. Science is the century-old endeavour to bring together by means of systematic thought the perceptible phenomena of this world into as thorough-going an association as possible. To put it boldly, it is the attempt at the posterior reconstruction of existence by the process of conceptualization. But when asking myself what religion is I cannot think of the answer so easily. And even after finding an answer which may satisfy me at this particular moment I still remain convinced that I can never under any circumstances bring together, even to a slight extent, all those who have given this question serious consideration.

At first, then, instead of asking what religion is I should prefer to ask what characterizes the aspirations of a person who gives me the impression of being religious: A person who is religiously enlightened appears to me to be one who has, to the best of his ability,

liberated himself from the fetters of his selfish desires and is preoccupied with thoughts, feelings, and aspirations to which he clings because of their super-personal value. It seems to me that what is important is the force of this super-personal content and the depth of the conviction concerning its overpowering meaningfulness, regardless of whether any attempt is made to unite this content with a divine Being, for otherwise it would not be possible to count Buddha and Spinoza as religious personalities. Accordingly, a religious person is devout in the sense that he has no doubt of the significance and loftiness of those super-personal objects and goals which neither require nor are capable of rational foundation. They exist with the same necessity and matter-of-factness as he himself. In this sense religion is the age-old endeavour of mankind to become clearly and completely conscious of these values and goals and constantly to strengthen and extend their effect. If one conceives of religion and science according to these definitions then a conflict between them appears impossible. For science can only ascertain what *is*, but not what *should be*, and outside of its domain value judgements of all kinds remain necessary. Religion, on the other hand, deals only with evaluations of human thought and action : it cannot justifiably speak of facts and relationships between facts. According to this interpretation the well-known conflicts between religion and science in the past must all be ascribed to a misapprehension of the situation which has been described.

For example, a conflict arises when a religious community insists on the absolute truthfulness of all statements recorded in the Bible. This means an intervention on the part of religion into the sphere of science ; this is where the struggle of the Church against the doctrines of Galileo and Darwin belongs. On the other hand, representatives of science have often made an attempt to

arrive at fundamental judgements with respect to values and ends on the basis of scientific method, and in this way have set themselves in opposition to religion. These conflicts have all sprung from fatal errors.

Now, even though the realms of religion and science in themselves are clearly marked off from each other, nevertheless there exist between the two strong reciprocal relationships and dependencies. Though religion may be that which determines the goal, it has, nevertheless, learned from science, in the broadest sense, what means will contribute to the attainment of the goals it has set up. But science can only be created by those who are thoroughly imbued with the aspiration towards truth and understanding. This source of feeling, however, springs from the sphere of religion. To this there also belongs the faith in the possibility that the regulations valid for the world of existence are rational, that is, comprehensible to reason. I cannot conceive of a genuine scientist without that profound faith. The situation may be expressed by an image: Science without religion is lame, religion without science is blind.

Though I have asserted above that in truth a legitimate conflict between religion and science cannot exist I must nevertheless qualify this assertion once again on an essential point, with reference to the actual content of historical religions. This qualification has to do with the concept of God. During the youthful period of mankind's spiritual evolution human fantasy created gods in man's own image, who, by the operations of their will were supposed to determine, or at any rate to influence the phenomenal world. Man sought to alter the disposition of these gods in his own favour by means of magic and prayer. The idea of God in the religions taught at present is a sublimation of that old conception of the gods. Its anthropomorphic character is shown, for instance, by the fact that men appeal to the Divine

Being in prayers and plead for the fulfilment of their wishes.

Nobody, certainly, will deny that the idea of the existence of an omnipotent, just and omni-beneficent personal God is able to accord man solace, help, and guidance ; also, by virtue of its simplicity it is accessible to the most underdeveloped mind. But, on the other hand, there are decisive weaknesses attached to this idea in itself, which have been painfully felt since the beginning of history. That is, if this being is omnipotent then every occurrence, including every human action, every human thought, and every human feeling and aspiration is also His work ; how is it possible to think of holding men responsible for their deeds and thoughts before such an almighty Being ? In giving out punishment and rewards He would to a certain extent be passing judgement on Himself. How can this be combined with the goodness and righteousness ascribed to Him ?

The main source of the present-day conflicts between the spheres of religion and of science lies in this concept of a personal God. It is the aim of science to establish general rules which determine the reciprocal connexion of objects and events in time and space. For these rules, or laws of nature, absolutely general validity is required—not proven. It is mainly a programme, and faith in the possibility of its accomplishment in principle is only founded on partial successes. But hardly anyone could be found who would deny these partial successes and ascribe them to human self-deception. The fact that on the basis of such laws we are able to predict the temporal behaviour of phenomena in certain domains with great precision and certainty is deeply embedded in the consciousness of the modern man, even though he may have grasped very little of the contents of those laws. He need only consider that planetary courses within the

solar system may be calculated in advance with great exactitude on the basis of a limited number of simple laws. In a similar way, though not with the same precision, it is possible to calculate in advance the mode of operation of an electric motor, a transmission system, or of a wireless apparatus, even when dealing with a novel development.

To be sure, when the number of factors coming into play in a phenomenological complex is too large scientific method in most cases fails us. One need only think of the weather, in which case prediction even for a few days ahead is impossible. Nevertheless no one doubts that we are confronted with a causal connexion whose causal components are in the main known to us. Occurrences in this domain are beyond the reach of exact prediction because of the variety of factors in operation, not because of any lack of order in nature.

We have penetrated far less deeply into the regularities obtaining within the realm of living things, but deeply enough nevertheless to sense at least the rule of fixed necessity. One need only think of the systematic order in heredity, and in the effect of poisons, as for instance alcohol, on the behaviour of organic beings. What is still lacking here is a grasp of connexions of profound generality, but not a knowledge of order in itself.

The more a man is imbued with the ordered regularity of all events the firmer becomes his conviction that there is no room left by the side of this ordered regularity for causes of a different nature. For him neither the rule of human- nor the rule of divine-will exists as an independent cause of natural events. To be sure, the doctrine of a personal God interfering with natural events could never be refuted, in the real sense, by science, for this doctrine can always take refuge in those domains in which scientific knowledge has not yet been able to set foot.

But I am persuaded that such behaviour on the part of the representatives of religion would not only be unworthy but also fatal. For a doctrine which is able to maintain itself not in clear light but only in the dark, will of necessity lose its effect on mankind, with incalculable harm to human progress. In their struggle for the ethical good, teachers of religion must have the stature to give up the doctrine of a personal God, that is, give up that source of fear and hope which in the past placed such vast power in the hands of priests. In their labours they will have to avail themselves of those forces which are capable of cultivating the Good, the True, and the Beautiful in humanity itself. This is, to be sure, a more difficult but an incomparably more worthy task.¹ After religious teachers accomplish the refining process indicated they will surely recognize with joy that true religion has been ennobled and made more profound by scientific knowledge.

If it is one of the goals of religion to liberate mankind as far as possible from the bondage of egocentric cravings, desires, and fears, scientific reasoning can aid religion in yet another sense. Although it is true that it is the goal of science to discover rules which permit the association and foretelling of facts, this is not its only aim. It also seeks to reduce the connexions discovered to the smallest possible number of mutually independent conceptual elements. It is in this striving after the rational unification of the manifold that it encounters its greatest successes, even though it is precisely this attempt which causes it to run the greatest risk of falling a prey to illusions. But whoever has undergone the intense experience of successful advances made in this domain, is moved by profound reverence for the rationality made manifest in existence. By way of the under-

¹ This thought is convincingly presented in Herbert Samuel's book, *Belief and Action*.

standing he achieves a far-reaching emancipation from the shackles of personal hopes and desires, and thereby attains that humble attitude of mind towards the grandeur of reason incarnate in existence, and which, in its profoundest depths, is inaccessible to man. This attitude, however, appears to me to be religious, in the highest sense of the word. And so it seems to me that science not only purifies the religious impulse of the dross of its anthropomorphism but also contributes to a religious spiritualization of our understanding of life.

The further the spiritual evolution of mankind advances, the more certain it seems to me that the path to genuine religiosity does not lie through the fear of life, and the fear of death, and blind faith, but through striving after rational knowledge. In this sense I believe that the priest must become a teacher if he wishes to do justice to his lofty educational mission.

ALBERT EINSTEIN

NOTES

THE IMPEACHMENT

T. B. Macaulay (1800-59), English historian, essayist and politician, was educated at Trinity College, Cambridge. After the success of his essay on Milton published in 1825 in the *Edinburgh Review*, he contributed regularly to that journal. He was elected to the British Parliament in 1830 where he distinguished himself as a Whig orator. As a member of the Supreme Council of India from 1834-8, he reformed the Indian educational system. After his return from India, he engaged himself in literature and politics. Macaulay's greatest literary work was *The History of England from the Accession of James the Second*. Because of its colourful, oratorical style and theatrical presentation of historical events, the book was a great success. However, it fails to achieve objectivity because of Macaulay's Whig bias. Macaulay's shorter historical and biographical essays on Milton, Bacon, Johnson and Warren Hastings are brilliant and graphic but not always accurate. Macaulay also wrote 'Lays of Ancient Rome' which made him a popular poet.

Warren Hastings (1732-1818) was Governor-General of India from 1774-84. After his Governor-Generalship, he returned to England and was charged by the Whig party, led by Burke and Fox, for excessive cruelty and corruption. He was brought to face his trial—or Impeachment—before the House of Lords in 1788. The trial lasted seven years and in the end Hastings was acquitted.

p. 11, Burke : Edmund Burke (1729-97), a great English orator and statesman. His impeachment of Warren Hastings is, perhaps, his masterpiece.

Francis : Sir Philip Francis (1740-1818), English statesman of repute. Appointed (1773) to the Council of Bengal, he came into conflict with Warren Hastings.

Windham : William Windham (1750-1810), English statesman, one of the distinguished parliamentary orators of his day.

p. 12, Westminster : Westminster Hall in London. In this Hall, the highest English Court of law has met for centuries.

Plantagenets : The royal dynasty in England from Henry II to Richard III.

Bacon : Sir Francis Bacon (1561-1626), English statesman and essayist. He was impeached and condemned for accepting bribes as Lord Chancellor.

Somers : (1651-1716), English Lord Chancellor. He was acquitted of charges of corruption by the Parliament.

Stafford : Thomas Wentworth, Earl of Stafford (1593-1641), chief adviser of Charles I. He was impeached by the Long Parliament in 1640 and afterwards beheaded.

Garter King-at-arms : The principal herald.

p. 13, Siddons : Sarah Kemble, Mrs Siddons (1755-1831). She is regarded as the greatest English actress of her day.

historian of the Roman Empire: Edward Gibbon (1737-94), famous English historian, author of the *Decline and Fall of the Roman Empire*.

Cicero: (106-43 B.C.) a great Roman orator, politician and philosopher.

Verres: Roman governor of Sicily from 73-71 B.C. On his return to Rome, he was tried on charges of bribery, his chief accuser being Cicero.

Tacitus: celebrated Roman historian and orator. In A.D. 100 he prosecuted Marius Priscus, Proconsul of Africa.

Reynolds: Sir Joshua Reynolds (1723-92), a great English portrait painter.

Parr: (1747-1825), English scholar and conversationalist.

p. 14, plighted his faith: The Prince of Wales married Mrs Fitzherbert in 1785 but arranged for the denial of the marriage in Parliament two years later.

Saint Cecilia: the patron saint of music and inventor of the organ : here Mrs Sheridan whose portrait was painted by Sir Joshua Reynolds.

Mrs Montague: (1720-1800). She was the leader of a group of 'blue stockings' of her day and played the hostess to many of the distinguished writers of the time.

Fox: Charles Fox (1749-1806) well-known English statesman and orator.

Georgiana Duchess of Devonshire: she canvassed votes for Fox when he contested the parliamentary seat against powerful opposition from the king.

Mens aqua in arduis: a mind steady in difficulties.

p. 15, Pitt: William Pitt, England's Prime Minister under George III from 1784 to 1801 and again for 1804-05.

Lord North (1732-92). England's Prime Minister from 1770 to 1782 under George III.

Sheridan: (1751-1816). Well-known English dramatist and politician ; author of *The Rivals* and *The School for Scandal*.

Demosthenes and Hyperides: two famous Greek orators.

p. 16, the youngest manager: refers to Charles Grey.

Charles Earl Grey (1765-1845). British statesman and Prime Minister from 1830-24.

the amiable poet: William Cowper (1731-1800).

. . . AND THEN GANDHI CAME

Jawaharlal Nehru (b. 1889), Prime Minister of India and the beloved leader of her teeming millions, is a glorious embodiment of the moral values for which our country has stood, for centuries. Wedded to the cause of peace like his master, Mahatma Gandhi, he is doing yeoman service in lessening international tension and is admired and respected by millions of peace-loving people all over the world.

Jawaharlal, however, is not only a great statesman but also a great writer of English who unites charm with force, a rare combination. His incarceration, extending over several years, for his leading part in the struggle for Indian independence, produced two of his greatest works, his *Autobiography* and the *Discovery of India*—both written within prison walls. The latter contains a vivid account of India's past and present, her strength and weakness, her glories and lapses. From it has been taken this extract. It is a brilliant presentation of India's debt to Mahatma Gandhi.

p. 21, *declassé* (French) : degraded from one's social class.

bourgeoisie : the middle class collectively.

derelicts : things (esp. ships at sea) abandoned as worthless.

'blood and toil, tears and sweat' : these words occur in Sir Winston Churchill's famous appeal to his nation when it was engaged in the second World War.

p. 22, *Janaka and Yajnavalkya* : Janaka, a learned king and wise sage of ancient India, had many spiritual discourses with Yajnavalkya, a great seer.

sea-change : see Ariel's song in Shakespeare's *The Tempest*.

But doth suffer a sea-change
Into something rich and strange.

p. 23, *Alcibiades* : (450-404 B.C.). Greek statesman and general. For many years he was the most devoted admirer and constant attendant of Socrates—the famous Greek philosopher.

corybant : reference to the priest of Cybele who celebrated the mysteries with mad dances to the sound of drums and cymbals.

THE INDUSTRIAL REVIVAL

J. R. D. Tata (b. 1904) is the well-known Indian industrial magnate. He is the Chairman and Director of all Tata and associated companies. He was the first pilot to qualify in India and he has held a flying licence since 1929. In 1930 he was one of the first Indians to make a solo flight to England from India. In the third session of the United Nations General Assembly held at Paris in September, 1949, he was a member of the Indian Delegation. He was awarded 'Padma Vibhushan' on Republic Day, 1955.

In his address, Mr Tata talks about the past and present of Indian industry and describes the obstacles that stand in the way of its development.

p. 24, *Damascus* : an ancient city in Syria famous for its steel and fabrics.

Crusades : military expeditions undertaken by some of the Christian nations of Europe in the Middle Ages with the object of wresting Jeru-

salem from the Mohammedans. These involved the loss of millions of lives.

damascened : decorated with gold and silver patterns.

mummies : dead bodies preserved by the ancient Egyptians by embalming them.

p. 25, *industrial revolution* : of the nineteenth century.

p. 26, *Adlai Stevenson* : a leading political figure in the U.S.A., he was the Democratic-party candidate for the U.S. Presidentship in 1952.

p. 27, *combine* : a union of companies or trading organizations for business purposes.

INDIAN ARCHITECTURE AND RELIGION

Sylvain Levi—an outstanding French savant—was appointed in 1894 at the age of 33, to the Chair of Sanskrit at the College de France. His interests were not confined to the study of Sanskrit only; they extended to researches in other classical languages of Asia. Oriental scholarship owes a great debt of gratitude to his profound studies. It was he who widened the historical outlook and perspective of Indian history and culture.

In 1922 he was invited to Santiniketan by Rabindranath Tagore. In the same year he was asked to preside at the second session of the Indian Oriental Conference at Calcutta. In his presidential address, he summed up the contribution of the Indian culture to civilization as follows: 'The multiplicity of the manifestations of the Indian genius as well as their fundamental unity gives India the right to figure on the first rank in the history of civilized nations. Her civilization, spontaneous and original, unrolls itself in a continuous time across at least thirty centuries without interruption, without deviation. Ceaselessly in contact with foreign elements which threatened to strangle her, she persevered victoriously in absorbing them, assimilating them and enriching herself with them.'

In 'Indian Architecture and Religion' the author shows the inter-relation between the religions of India and its architecture.

p. 32, *Taxila* : famous ancient Indian university in the Panjab.

religion . . . daily life : religious beliefs and rituals which permeate and influence the daily life of the individual.

humanity . . . divinity : men absorbed in the thought of God.

p. 33, *alternating rhythm* : regular changes.

man dwarfed . . . Nature : overpowered by the spirit of the elemental forces of Nature.

ephemeral play . . . illusions : short-lived, passing influences of imaginary beliefs.

p. 34, *Elamite* : of Elam, an ancient country of Asia. A civilization seems to have existed there about 5000 B.C.

Sumerian: the Sumerians flourished in the region between the Tigris and the Euphrates. Their civilization was at its best between 2800 to 2300 B.C. and formed the basis of Babylonian and Assyrian art. These ancient people achieved wonderful craftsmanship especially in stone- and metal-engraving, wood-carving and pottery.

pantheon: the deities of a people collectively.

megolithic period: a period in man's ancient culture characterized by a variety of stone monuments. Coincided with the Neolithic or New Stone Age—perhaps between 2400 to 1800 B.C.

dolmens: stone chamber consisting of a large stone laid on three or four more upright ones; prehistoric.

menhirs: ancient, upright single stone.

cromlechs: sepulchral monuments. (Dolmens, menhirs and cromlechs are all relics of the Neolithic Age.)

vast movement: typified by a revolt against polytheism and by a greater emphasis on the importance of man's soul.

Confucius: (550-479 B.C.) founder of the Confucian faith followed mainly in China. He taught special respect for tradition and the sanctity of family life. He preached the need for right and religious conduct.

Lao-Tse: of the sixth century B.C. Founder of Taoism, this Chinese philosopher inculcated the withdrawal from the world of action into a quiet and passive life.

Zoroaster: Persian prophet of the sixth century B.C. He opposed polytheism and pointed the way to a good and pure life. The religion preached by him is followed by the Parsis.

Pythagoras: Greek philosopher and mathematician of the sixth century B.C. He believes in the immortality and transmigration of souls.

liturgical . . . fetters: restrictions imposed by prescribed forms of worship and religious ceremonies.

p. 35, *cosmology*: study of the universe, as an ordered whole, and built upon a pre-conceived plan.

p. 36, *the wheel of the Law*: a Buddhist expression derived from the Buddhist legend about the mystical wheel *dhammapada charkha* not to be confused with *samsar charkha*. For descriptions of the 'wheel of the Law' see Sir Edwin Arnold's *The Light of Asia*.

the umbrella of sovereignty: a common legend prevalent in Asia and parts of Africa, signifying the regalia of royalty.

p. 40, *Parthenon*: the famous 'Temple of the Maiden' at Athens built in 447-438 B.C.

THE LEANING TOWER

Virginia Woolf (1882-1941), the younger daughter of Sir Leslie Stephen, was married to Mr Leonard Woolf in 1912. One of the most important

of modern novelists, she was always experimenting so that her novels are something different from the mere fictional narratives of the characters. By gradual stages she worked out a boldly-new artistic form. Her method is to select a plot with a simple outline and to concentrate on details, not as events of daily life, but as they pass through the mind of the characters. Among her most successful novels are *Mrs Dalloway*, *To The Lighthouse* and *The Waves*.

Apart from novels, Virginia Woolf also wrote literary and social essays which are distinguished by a penetrating judgement, intelligence and a power of clear analysis. In her essay 'The Leaning Tower' she discusses with confidence and conviction the place of tradition and education in a writer's mental make-up and contrasts the changing patterns in the literature of her country due to social changes. Belonging to a 'privileged' and a highly-cultured class and the literature it has produced, she is frankly critical of the current trends.

p. 43, writer's education . . . other educations : it has to be more exclusive and comprehensive; not merely in the academic sense of the term.

parents' station . . . gold : signify social security.

p. 44, Trollope : Anthony Trollope (1815-82), the popular Victorian novelist. Although he did not make any significant contribution to the development of the novel, his descriptions of clerical life in a small provincial town of England made him very popular. From his writings, he is said to have earned £70,000.

Hardy : Thomas Hardy (1840-1928) was a major English novelist. He was more original than Trollope. High seriousness and tragedy play an important part in all his plots.

Henry James : (1846-1916) a great American novelist who settled in Europe in 1875. His novels deal with the impact of the older civilization of Europe upon American life and of studies of English life itself.

Dryden : John Dryden (1631-1700), poet and dramatist.

Swift : Jonathan Swift (1667-1745) was one of the greatest masters of English prose. An Irishman by birth, he ranks among the great satirists of the world.

Voltaire : (1694-1773) the pen-name of the well-known French philosopher and writer.

Jane Austen : (1775-1817) English novelist.

Dickens : Charles Dickens (1812-70) was the popular Victorian novelist.

p. 45, Day Lewis . . . Louis MacNeice : contemporary writers.

'*Behind us . . . educations*' : The background, alluded to by reference to suburbs, was middle-class outlook and security.

p. 47, Marx : Karl Marx (1818-83), founder of Marxian Socialism, is considered the prophet of communism. Author of *Das Kapital* and *Communist Manifesto*, his writings are looked upon by communist parties throughout the world as the ultimate source of inspiration for all matters pertaining to the problems of economics, politics and philosophy.

Tolstoy : Count Leo Tolstoy (1828-1910). Russian writer of noble birth. He inherited a large fortune. He made several attempts to renounce his property. Without it he would not have had the economic security to devote his time to thinking and writing.

D. H. Lawrence : (1895-1930). English poet and novelist. He was the son of a Nottinghamshire miner and for some time worked as a miner. As a writer, he is regarded as one of the most outstanding English novelists of all time.

p. 48, Mr Yeats : William Butler Yeats (1865-1939). Brought up in the great tradition of the Romantics, he adapted it to suit his own lyric genius.

Mr Eliot : Thomas Stearns Eliot, O.M. (1888-) poet, critic, playwright and winner of the Nobel Prize in Literature, he is regarded as the most outstanding English poet of our age.

p. 49, 'We have come at last . . . love of man for man' : From Stephen Spender's poem beginning 'After they have tired of the brilliance of the cities'.

Wordsworth : William Wordsworth (1770-1850). English poet and the leader of the Romantic Revival Movement in English poetry. He defined poetry as 'emotion recollected in tranquillity'.

'Love had he found . . . among lovely hills' : From Wordsworth's 'Song at the Feast of Brougham Castle'.

p. 51, Thackeray : William Makepeace Thackeray (1811-63). Famous Victorian novelist.

Flaubert : Gustave Flaubert (1821-80). Author of the great nineteenth-century novel *Madame Bovary*, this French novelist was known for his style and for his realistic approach to life.

Balzac : (1799-1850). In *La Comedie Humaine*—a collection of romances he attempted to portray French society faithfully, and in great detail.

Stevenson : Robert Louis Stevenson (1850-94). Scottish novelist, essayist and critic.

Dr Freud : Sigmund Freud (1856-1939) is known as the father of psycho-analysis. The study of neurotic ailments led him to various conclusions, relating to the normal mind, which form the basis of psycho-analysis. He explored the unconscious mind and revealed the conflicts which result in repressions, and here he emphasized the importance of sex.

THE ARTIST, THE SCIENTIST AND THE PEACE

Sinclair Lewis (1885-), American novelist, essayist and playwright, was born in Minnesota and graduated from Yale. After engaging in hack-work, travel in the U.S.A. and editorial positions in the city of New York, he achieved wide recognition for his first distinguished work

of fiction *Main Street* which is a realistic novel of life in New York city. It was followed by *Babbitt*, a satirical portrayal of American business-men, *Arrowsmith*, based on the career of a man of science, and later on by *Dodsworth*, a sympathetic portrayal of a retired manufacturer who seeks new interests in European travel. In 1930, he became the first American author to be awarded the Nobel Prize in Literature. Sinclair Lewis is primarily an ingenious satirist of American middle-class society, with a bias seemingly in favour of middle-class liberalism.

In the essay under study, the problem of the relation of the artist to society is approached from an angle which the late Mrs Virginia Woolf would not approve of. Deliberately, we have juxtaposed Sinclair Lewis' essay alongside that of Virginia Woolf's to enable the reader to examine the two points of view and get a correct perspective of the role of the artist in society.

p. 53, all creative talents . . . war and tyranny: in a sense this remark is applicable to the late Virginia Woolf. Had it not been for World War II, her tragic death may not have taken place.

the universal struggle for . . . democracy: a reference to World War II, which was a total war. It affected the daily life of all the citizens, whether in the armed forces or in civil life. In such a situation, it was difficult for an individual to remain aloof. He had to take sides.

the old-fashioned type of artist: the type described in the preceding essay.

Pasteur: Louis Pasteur (1822-95). One of the greatest of modern scientists. He was always conscious of his mission to serve humanity. 'Science in obeying the laws of humanity, will always labour to enlarge the frontiers of life.' His work on germs revolutionized medical science. It is difficult to understand why Sinclair Lewis links him up with Whistler and Walter Pater. Pasteur never felt that his creative work was so superior that he could lead a life of isolation.

Whistler: J. A. M. Whistler (1834-1903), an American painter and writer who believed that art is justified for its own sake.

Walter Pater: (1839-94) English critic who believed in the cult of art for art's sake.

Vesalius: Andrew Vesalius (1514-63), a celebrated anatomist who later became a physician to Charles V and Philip II of Spain.

p. 54, Bernard Shaw: (1856-1950) British playwright, novelist and critic. Here is an artist who does not believe in art for art's sake. Art for him is a medium for the communication of his ideas. It was through it, he would carry on his propaganda. Unlike the artist with 'expensive educations' described in the previous essay, he is an example of an artist who is frankly partisan and who refuses to live in isolation.

Professor Einstein: See Notes p. 194.

Carl Sandburg: (1878-). American poet and biographer. His poetry reveals his social sympathies and his faith in the future of the working class.

Gerhart Hauptmann: (1862-1946). German playwright, novelist and poet.

Frank Sinatra: American singer and film star. Extremely popular with the American public.

the goose-stepping lords of Germany: The Junkers of East Prussia, Germany, who formed the officer-class of the German army. Goose-stepping refers to the stiff ceremonial drill.

Franz Werfel: (1890-1945). Austrian novelist, playwright and poet who was forced to go into exile during the Nazi regime.

Bruno Walter: a conductor of the operas. In 1933 he was forced by the Nazis to leave Germany. Eventually, he became a French citizen.

Stephen Zweig: (1881-1942). Austrian biographer, essayist, play-wright and poet who committed suicide in Brazil.

Bela Schick: pediatrician. He devised the Schick test, a skin-test to determine the susceptibility to diphtheria.

Thomas Mann: German novelist.

Leon Feuchtwanger: German novelist.

schmalz-headed: fat-headed.

p. 55, the exile of Dante: Dante Alighieri (1265-1321) is the celebrated Italian poet. He wrote the *Divina Commedia*. He incurred the displeasure of the Pope and was sentenced to fine and imprisonment. He fled from his home-town Florence and his subsequent wandering life was wretched and obscure.

it tickles . . . gorillas: flatters the men in power. Notice the contempt the author shows to men who have usurped power and wish to subordinate art, science and philosophy to their way of thinking.

p. 56, when the Nazis . . . Berlin: The Nazis under Adolf Hitler, came to power in 1933. Their outlook was based on the so-called racial superiority of the Nordic race. Literature and ideas which did not conform to their ideology were taboo. One of their first acts was to burn books which were not in accordance with the Nazi creed.

old city . . . medievalism: refers to the problem of censorship. During the last five years, under the influence of the demagogue Joseph McCarthy, this tendency received an unhealthy fillip in the U.S.A. under the pretext of protecting the human mind from communist influence, several books of outstanding writers were banned from public libraries. Fortunately, the influence of McCarthy is on the wane.

Mendelssohn: (1809-47) the German-Jewish composer of music. During the Nazi regime in Germany, his work was tabooed on the ground that it was not the composition of a member of the *Herrenvolk* (the master-race of Nordic Aryans) but of a Jew.

Dr Goebbels: Three men shaped the destiny of Germany from 1933-45. Adolf Hitler, Hermann Goering and Joseph Goebbels. Dr. Goebbels was

the Minister for Propaganda under Hitler. It was he who decided what was 'good' or 'bad' for the German mind to absorb.

MORAL VALUES IN LITERATURE

S. Radhakrishnan (1888-), the great Indian educationist and philosopher, received his education at Madras Christian College and was for some time Professor of Philosophy at Presidency College, Madras, and Mysore University. Later on he was appointed Upton Lecturer in Comparative Religion at Manchester College, Oxford. In 1936 he occupied the chair of Spalding Professor of Eastern Religions and Ethics at Oxford. In 1939 he became the Vice-Chancellor of Benares University. As a member of the International Committee on intellectual co-operation and a leader of the Indian delegation to UNESCO his work has been of outstanding merit. In July 1949, he was appointed Indian Ambassador to Soviet Russia and in that capacity he achieved signal success. At present he is the Vice-President of the Indian Republic, which office he richly deserves. He is a master of profound thought and brilliant exposition. Both in speech and writing he has a marvellous command over the English language. He always goes to the fundamentals of a subject and makes the soul of it sparkle in his words. Among his numerous publications are *The Reign of Religion in Contemporary Philosophy*, *The Philosophy of the Upanishads*, *Hindu View of Life, East and West in Religion*, *Eastern Religion and Western Thought*, *Kalki or the Future of Civilization* and *The Bhagavad Gita*.

p. 58, H. G. Wells : (1866-1946). English novelist, historian and social critic.

Columbus : Christopher Columbus (1451-1506), a Genoese navigator, discoverer of America.

Vasco da Gama : (1460-1524). Portuguese navigator, the first European to travel by sea to India.

p. 59, Kalidasa : Indian dramatist and poet who lived in the fifth century B.C. in the court of King Vikramaditya. He is regarded as the greatest figure in Sanskrit literature. His three surviving plays are *Shakuntala*, *Vikramaorvshi* and *Malavikagnimitra* besides two epics and other lyrical poems.

Abhijnanasakuntala : celebrated Sanskrit drama by Kalidas. It is the story of a maiden, whom King Dushyanta marries. The king is bewitched so that he forgets his bride until a ring he gave her is discovered in the body of a fish.

ananda : ecstasy.

Brahman : the supreme spirit, creator of the universe.

p. 60, alaukikapratyaksa : divine perception.

empirical : founded upon experiment or experience.

naturalists : naturalism in literature is a movement that grew out of realism. While realists strove for a harmony of form and truth,

naturalists concentrated upon the depiction of social environment, defections of human nature and of bourgeois society.

Blake : William Blake (1757-1827). English artist and poet.

Empedocles : (493-433 B.C.). Greek philosopher, scientist, poet, orator and statesman.

Lucretius : (94-55 B.C.). Roman poet and philosopher, author of *De Rerum Natura*, a didactic poem in six books.

Marxist society : a class-less society based on the doctrines of the German philosopher, Karl Marx.

ratiocination : the process of reasoning ; deduction from premises.

Dionysian : the follower of Dionysius, the Greek god of emotional religion. Dionysians, chiefly women, abandoned their houses and work, and roamed about in the mountains in a state of ecstasy.

Apollonian : the followers of Apollo, a Greek god, who approves codes of law, inculcates high moral and religious principles and favours philosophy.

p. 61, *Nanrsih kurute kavyam* : Only a seer can be a great poet.

p. 62, *Santo bhumin tapasa dharayanti* : The good and noble hold the universe through their penance.

Valmiki : the great Sanskrit poet who lived in the sixth century B.C. He composed the great epic *Ramayana*.

WORLD RESOURCES AND WORLD POPULATION

Lord Simon of Wythenshawe (1879-) is an old, liberal politician. For some years he was a Member of Parliament. From 1947-52, he was the Chairman of the British Broadcasting Corporation. He is the author of several books which deal with the current social and economic problems of Great Britain. He is not to be confused with the late Sir John Simon who was the Chairman of the Royal Commission which came to India to study the operation of the Montagu-Chelmsford Reforms of 1919.

In this essay the author is dealing with a problem which is engaging the minds of sociologists and economists throughout the world. It is the problem of equating the food supply to an increase in population together with a rise in the standard of living. One of the remedies suggested is to check the growth of the population for the resources of the world are inadequate for the increasing world population. As a result of the First Five-Year Plan, there is no doubt that the standard of life of the common man in India has risen. This improvement can only be maintained if the growth of population is checked.

p. 65, *Industrial Revolution* : a phrase used to describe the vast changes in the industrial system, particularly in Great Britain, which resulted

from the inventions and discoveries of the eighteenth and the early nineteenth centuries.

THE DOUBLE CRISIS

Aldous Huxley (1894-), the grandson of Thomas Henry Huxley, is a great essayist, novelist and biographer. His novels are brittle, sceptical, satirical discussions of contemporary civilization. He is a bitter foe of everything that modern civilization stands for. According to him, it has led mankind to moral anarchy. He criticizes machinery and mechanized amusements, scientific intellectualism, the feeble decaying Christianity, etc. His novels and essays are mainly analyses of perversions and aberrations of modern western life. He is the author of *Crome Yellow*, *Antic Hay*, *Brave New World*, *Eyeless in Gaza*, *Ape and Essence* (all novels) and several collections of essays including *Do What You Will*, *The Olive Tree*, *Science, Liberty and Peace* and *On the Margin*. He possesses a powerful, vigorous style and is a master of irony, satire, vituperation, denunciation, all reminiscent of Thomas Carlyle. Perhaps the cleverest of the clever young writers of the 'twenties, he charms by his style, amuses by his wit and stimulates by his satirical acumen. He is one of the most provocative of all modern writers trying to shake us rudely out of our complacency.

p. 69, demographic : vital and social statistics as applied to the study of nations.

ecological : study of the special distribution of races and populations with reference to material and social causes and effects.

exacerbate : to embitter; to provoke.

p. 70, Land of Cockayne : legendary country described in medieval tales where delicacies of food and drink were to be had for the taking.

p. 71, dust-bowls : a term applied particularly to part of the State of Tennessee in the U.S.A. where, owing to the ploughing up of grazing country, the soil was constantly carried away in the form of dust by frequent high winds.

p. 72, Lysenko : Trofim Derisovich Lysenko (1898), Russian agronomist, is the leader of the Soviet School of genetics which opposes the theory of heredity and supports the doctrine that characteristics acquired through environmental influences are inherited.

tundras : the vast, treeless plain region which makes up the greater part of the north of Russia.

lebensraum : space for living; breathing space; additional territory desired by a nation for the expansion of trade.

lean years of the thirties : In 1929, a great economic catastrophe overtook U.S.A. It was followed by a long depression in which the U.S.A.'s foreign trade was badly hit. At last Roosevelt gave to the nation a new programme known as the New Deal. One of its reforms was the conservation of natural resources.

p. 73, *lode*: a vein containing metallic ore.

Apres moi le deluge: After me the deluge—a remark attributed to Louis XV.

p. 75, *etiological*: an inquiry into the origin and causes of disease.

THE DILEMMA OF THE SCIENTIST

J. Bronowski originally came from Poland but for a very long time he has settled in England. Like Joseph Conrad and T. S. Eliot he can be considered an equally good English writer. He spent many years as an undergraduate and research student in mathematics at Cambridge University before becoming a University lecturer. In connexion with his scientific work he visited various places. Besides science, he is also a keen student of English literature and his best known work is his biography of William Blake. He has also written some short verse-dramas which have been broadcast.

p. 76, *Nagasaki*: The Japanese city which was destroyed by an atom bomb during World War II.

skewed: turned to one side; slanting.

gasometer: a tank in which gas is stored for distribution.

fission: the action of splitting or dividing into pieces.

Hitler: the Nazi dictator of Germany who came to power in 1933.

p. 77, *pacifist*: one who believes that the abolition of war is desirable and also possible.

President Roosevelt: Franklin Delano Roosevelt, the Democratic leader, who became the President of U.S.A. in 1933 and held the office for three successive terms.

Nazis: members of the National Socialist Party of Germany, led by Hitler.

p. 78, *round robin*: a petition; an appeal.

Hiroshima: another Japanese city that was destroyed by the atom bomb.

Lateran Council: the tenth ecumenical council of the Roman Catholic church convened in 1139 at Lateran Palace by Pope Innocent II. One of its canons was the prohibition of the use of bows and cross-bows in fighting Christians.

p. 79, *Peace Campaigns*: Russian-inspired conferences in which a desire for world peace and a demand to outlaw the atomic bomb are reiterated.

p. 80, *Iron Curtain*: the phrase was coined by Sir Winston Churchill to apply to East European countries over which the influence of Soviet Russia predominated. All contact with the outside world was restricted to the minimum.

margarine: a substitute for butter made out of animal or vegetable fats.

p. 81, *Newton* : (1642-1727). Sir Isaac Newton, one of the greatest scientists of all time, who, by his great discoveries of the differential calculus, the nature of light and the laws governing the forces of gravitation, changed the course of human thought.

THE TRUTH ABOUT PYECRAFT

In the writings of H. G. Wells (1866-1946) two factors stand out prominent—the first is the sense of excitement due to the progress of science, and the second is the social problems of the day.

With an intimate knowledge of ordinary people he built round them stories which appear fantastic and are yet convincing. He is one of the pioneers who used scientific facts in fiction and used them with imagination. He never gave the impression that they were extraneous to his theme.

The social problems of the day engaged his attention. Later on in life he gave almost undivided attention to them. He felt that the world could be bettered. To achieve this, the people should be educated. He wrote a *History of the World* and *The Science of Life*. These were immensely popular books and influenced public opinion. Unfortunately, towards the end of his life Wells lost his early optimism and his faith in mankind. In his small book *The Mind at the End of Its Tether*, he gave expression to this disillusionment.

p. 86, *obese* : very fat or fleshy.

A priori : that which can be known by reason alone.

p. 87, *Pharmacopoeia* : a book containing a list of drugs, chemicals, and medical preparations, with descriptions of them.

p. 89, *goggle* : to look obliquely; to roll the eyes.

p. 90, *Bloomsbury* : A central district of London.

Trappistine : a wine made by Trappist monks in France.

AN ASTROLOGER'S DAY

R. K. Narayan, a South Indian, has chosen English as the medium of his literary work. His command of English is excellent and his style is not insipid and colourless. He has considerable narrative power and there is a flow in what he writes.

In 'An Astrologer's Day', he studies an ordinary aspect of Indian life, with which we are all very familiar. He has tried to expose the deceptions practised in the name of astrology. His portraiture of pavement-life is masterly and has been done humorously. The value of this story lies in its realistic study of life in an Indian city.

p. 98, *cosmos or dahlia* : flowers.

p. 100, *saturn* : one of the planets. According to astrological beliefs, planetary influences affect human lives and action.

TWO PATTERNS

Julian Huxley is Professor of Zoology in the University of London. He belongs to a distinguished family of scientists. He is an authority on the Theory of Evolution, and his book *Evolution : A Modern Synthesis*, is the best exposition of the subject.

He is one of the few scientists who have started feeling that time now has come for scientists to look out of their laboratories and even come out of them. It is scientists like Julian Huxley who have written books on science for laymen and thus popularized science.

In addition to simplifying science for the layman, Huxley has examined and pondered over other aspects of life too. This essay is an excursion by a scientist, trained to think in scientific ways, in the field of democracy. His approach is objective and he is not swayed by emotional considerations or influenced by prejudices and loyalties.

Huxley's style is simple and free from embellishments which we normally associate with a literary style. His idea is to put things clearly, simply in order that all kinds of persons may understand. A simple style is best suited to the object Huxley has in view. But it is not a dull and colourless style. It has beauties of its own.

p. 108, *the Reform Bill of 1832* : this Bill was passed by the House of Commons in 1832. It conferred the right of vote on all adults (male) in England.

disfranchise : to deprive of a privilege or the right of vote.

suffrage : the right of voting in political matters.

p. 109, *Edmund Burke* : (1729-97). He is a great master of the ornate-style. He played a conspicuous part in the political life of the eighteenth century.

rhetorical : exhibiting the art of rhetoric, that is, of expressive speech.

p. 110, *Führer* : German word, meaning leader or chief.

Duce : the Italian word for leader, chief.

p. 111, *laissez-faire* : literally, to let people do, or make what they choose, hence non-interference—a phrase used in economics depreciating government interference to regulate labour, commerce, etc.

p. 112, *Ku-Klux-Klan* : a secret political organization in the U.S.A., its aim being to establish white supremacy.

Tammany : the Tammany society or Tammany Hall; often used as a byname for corrupt influence in politics.

Borough Council : governing body of a town in England.

British anti-slavery movement : a movement started in the later half of the eighteenth century, the purpose of which was to stop negro trade and abolish slavery all over the world.

p. 113, *Communism*: a system of social organization in which goods are held in common.

Fascism: the principles of the political creed of Mussolini, according to which the state is supreme.

p. 114, *Boer War*: war between England and the Boers, the white inhabitants of S. Africa from 1901-04.

Eire: Ireland.

FORMS OF FREEDOM

Bertrand Russell (1872-) is a remarkable personality of this age. He has made full use of his gifts of intellect and at the age of 82 has written a remarkable book, *Human Society in Ethics and Politics*, which deals with one of the most fundamental problems of civilization.

His first significant work was on mathematics—*The Principles of Mathematics*. It is an important work on the subject and placed him among the foremost modern thinkers.

The impact of World War I was terrible on him. A confirmed pacifist he could not in any way associate himself with the war effort. For his pacifist views, he had to undergo imprisonment. During the inter-war years, he devoted his time to writing. He wrote books on philosophy, psychology, political science and current problems. After World War II recognition of his status as a thinker and writer came. He was awarded the Nobel Prize for Literature and the Order of Merit. Whatever he has touched, he has illumined and enriched.

In this essay, taken from his book *The Impact of Science on Society*, he points out the evil effects of concentrating too much power in the hands of officials. This increase of power has grown with the increase in organization. To find safeguards for controlling such power is, for the author, 'one of the most important political problems of our time'.

p. 116, *yeoman*: a free-holder; a man free-born.

Solon: the Athenian law-giver, called one of the 'seven wise men of Greece'. He revised the Athenian constitution in 594-593 B.C.

Norris: Frank Norris (1872-1902) was an American journalist and author. His novels *The Octopus* and *The Pit* were planned two of a trio to complete 'the epic of the wheat'.

Marshall Aid: an American scheme devised in 1948 to help non-communist European countries to recover from the disasters of World War II. It took its name from General George Marshall, Secretary of the State Department of the United States of America.

the Farm Block: the group of senators in the U.S.A. senate who represent the farmers of the country and look after their interests.

p. 117, *Malthus*: (1766-1834). The English economist, published in 1798. *An Essay on the Principle of Population*, in which he contended that the increase in population was dependent upon the presence of warmth

and food and would only be checked by the lack of these things or by such positive checks as disease, epidemic and war.

p. 118, *Western Union, Atlantic Pact*: various international agreements, or attempts at agreements, made in recent years.

p. 119, *Jacks-in-office*: a person with little power, perhaps a civil servant, who behaves as though entitled to bully others.

p. 120, *closed shop*: an industry which admits members of a trade union only.

p. 121, *mangold-wurzels*: a turnip-like vegetable; used by the author to illustrate his point forcefully.

Mill: John Stuart Mill (1806-73) was an eminent thinker on politics, economics and philosophy.

p. 122, *Kremlin*: the central secretariat buildings of the Government of the U.S.S.R. in Moscow. By implication here, the Soviet Government.

NEW CLIMATES OF THE WORLD

The career of Lord Beveridge (1880-) has been varied and distinguished. He has been a Civil Servant, University Professor, administrator and thinker. During World War II, he was asked by the U.K. government to draw up a plan of social security for Great Britain. The outcome of this was the monumental work known as *The Beveridge Report* which was published in December 1942. The Report set out to tackle the problem of overcoming insecurity, disease, unemployment and ignorance. It had a tremendous impact on the popular mind and it may truly be said that the evolution of Great Britain into a Welfare State is due in a large measure to this Report.

The extract under study is taken from Lord Beveridge's autobiography entitled *Power and Influence*. The author defines the terms 'power' and 'influence'. By 'power' he means 'the ability to give other men orders . . . if power is to be used for good, it must be guided by reason, and accompanied by respect for other men'. By 'influence' he means, 'changing the actions of others by persuasion' by 'appeal to reason or to emotions other than fear or greed'.

p. 128, *meteorological*: of or pertaining to the atmosphere and its phenomena or meteorology.

p. 129, *etymologically*: etymology is the branch of philosophy (science of words) which deals with the history of a word, showing its source and its gradual development.

Utopia: any place or state of ideal perfection, especially in laws, government and social conditions.

p. 130, *Berwick*: a constituency in England from which the author stood for election for Parliament.

p. 133, *Ogpu*: name of the Russian secret police.

liberticide: a destroyer of liberty.

SIR FLUFF

Ritchie Calder is an outstanding figure in scientific journalism. He is the science editor of the London *News Chronicle*, a member of the British Association and the United Kingdom delegate to UNESCO. His work has brought him into close contact with the leading scientists of this generation.

The passage under study is taken from *Profile of Science*.

He does not merely expound the facts of science, but also deals with their implications. His exposition is masterly and accurate and has won him the confidence of the scientists of whom he writes.

The author gives an absorbing description of the great achievement of Sir Alexander Fleming. Educated at St Mary's Hospital, University of London, Sir Alexander became the Professor of Bacteriology. In 1922 he discovered Lysozyme—a bacteria-destroying substance found in certain plant and animal secretions. In 1928 he observed a germ-destroying substance produced by a bacterial mould and gave it the name of penicillin. In 1945, along with Prof. E. B. Chain and Sir Howard W. Florey, Sir Alexander was awarded the Nobel Prize in Physiology and Medicine for his work on penicillin. He died early in 1955.

p. 137, *Sir Almroth Wright* : (1861-1947). British pathologist. He was the Principal (1902-46) of the Institute of Pathology and Research, St Mary's Hospital, London. An authority on vaccine therapy, he developed a system of anti-typhoid inoculation.

bacteriophage : an organism which when introduced into a body destroys bacteria.

Dean Swift : (1667-1745). A great English satirist and author of *Gulliver's Travels*.

p. 138, *mould* : a fungus growth on substance which lies in moist air.

fluff : soft, fine, feathery stuff.

p. 139, *cultures* : rearing.

staphs : abbreviation of 'staphylococci'.

septicaemia : blood poisoning; infection caused by the presence of bacteria in the blood.

p. 141, *He used . . . bacillus coli* : various bacterial germs.

Scotland Yard : headquarters of the London Police.

con-man : slang for a confidence trickster.

p. 142, *carbuncles, sinuses* : boils, cavities formed as a result of an abscess.

p. 143, *copper's narks* : slang for police informers.

hyssop : a herb.

p. 144, *enzymes*: chemical ferments produced by living cells.

ferments: substances which produce chemical changes in other bodies but do not change themselves.

p. 145, *that property . . . tears*: see pp. 137-8 for the capacity of tears to kill germs. The reference here is to Tennyson's poem 'Idle Tears'.

Rhodes Scholarship: founded by John Cecil Rhodes (1852-1902), a British statesman and capitalist who acquitted a large fortune in South Africa. He left a large portion of his fortune to be utilized for the founding of scholarships at Oxford.

p. 151, *Rockefeller Foundation*: founded by the well-known American industrialist and philanthropist, John D. Rockefeller. Its express purpose is to promote the well-being of mankind throughout the world. Its work has been in the field of public health and administration in the medical sciences, the natural sciences and social sciences.

Nuffield Trust: trust founded by Lord Nuffield, British automobile manufacturer and philanthropist.

NANGA PARBAT

Dr Karl M. Herrligkoffer was the organizer and doctor of Willy Merkl Memorial Expedition, 1953 which successfully climbed Nanga Parbat. When he was 17 years old in July 1934, he heard about the death on Nanga Parbat of his step-brother Willy Merkl. Three years later the Germans organized a second expedition to climb Nanga Parbat. Seven climbers with their sherpas lost their lives in the attempt. These two tragic events led Dr Herrligkoffer to plan the triumphant expedition of 1953. The expedition consisted of ten in number. They left Munich on 17 April 1953 and returned on 3 July 1953.

The years 1952-3 are remarkable in the history of Himalayan mountaineering. In 1952 the French expedition climbed Annapurna. In May 1953 the conquest of Everest was achieved by the British expedition. In July 1953 the German expedition triumphed over Nanga Parbat.

p. 152, *Hermann Buhl*: a 29-year-old climber of the Austrian Alpine Club. He has won fame as a solo-climber. The peak of Annapurna was climbed by Maurice Herzog and Lachenal, the Everest peak by Hillary and Tensing, but the peak of Nanga Parbat was climbed singly by Hermann Buhl.

Otto: Otto Kempfer, the treasurer of the expedition, who was to have accompanied Hermann Buhl on the final assault on Nanga Parbat.

chrysalis: here it refers to a sleeping bag.

spur: a rib of a rock.

p. 153, *crampons*: metal frame with spikes for use on hard snow or ice. They are made to fit the soles of the boots.

Rakhiot side : near it in 1934 and again in 1937, the members of the German expedition, had been overwhelmed by an ice avalanche.

trapezoidal : quadrilateral shaped.

p. 155, *Pervitin and Padutin* : drugs.

declivity : slope down.

Aschenbrenner and Schneider : members of the German expedition of 1934. They failed to climb the last 200 feet of the Summit.

Mummery : A. F. Mummery, one of Great Britain's greatest mountain climbers, lost his life in 1895 in an attempt to climb Nanga Parbat. This was the first time any man had made such an attempt.

traverse : to cross a mountain slope horizontally.

p. 156, *cornices* : overhanging mass of snow or ice along a ridge.

couloir : of rock, ice or snow ; a gully in a mountain-side.

gendarme : rock-tower on the ridge of a mountain.

p. 157, *anorak* : a jacket with hood which mountaineers wear to protect themselves from the wind.

p. 158, *bivouac* : temporary place of camping without tents for the night.

p. 160, *Hans or Walter* : Hans Ertl was the photographer and Walter Frauenberger was the deputy leader of the 1953 expedition.

SCIENCE AND RELIGION

Dr Albert Einstein died on 18 April 1955 at the age of 76. Of Jewish parentage, he was born in Germany. His nature revolted against the German militarism of the nineteenth century. Therefore, at the early age of 21, he took up Swiss citizenship. Just before World War I, he was offered a professorship at Berlin. He accepted the appointment and lived there till 1932. Once again he was forced to leave Germany after Hitler came to power. The Jews were persecuted and Einstein was deprived of his citizenship. After a year at Oxford, he went over to the U.S.A. and joined Princeton University. He became a U.S. citizen.

Einstein's recent death deprives the scientific world of the most outstanding scientist of this age. His startling theory of Relativity has changed man's conception of the universe. It has completely revolutionized Newton's theories. But his influence is not confined to the scientific world alone. His approach to problems has stimulated scientists to take an interest in philosophical and ethical questions and has encouraged philosophers not to overlook scientific data.

In his essay 'Science and Religion' he tries to resolve the apparent conflict between knowledge and belief and advances a point of view which neither the man of science nor a religious person can ignore.

p. 165, *rationalist* : one who treats reason as the ultimate authority and the source of knowledge itself, superior to and independent of sense-perceptions.

p. 167, *divinization* : to treat as divine.

p. 168, *conceptualization*. the doctrine that universals have an existence in the mind apart from any concrete embodiment.

p. 169, *Spinoza* : (1632-77). A Jewish philosopher who sets forth a system of Pantheism which makes God the cause and the substance of the Universe, abolishes free will and establishes a necessity of the Divine-nature.

Galileo : (1584-1642). Famous Italian scientist who made the first telescope.

Darwin : (1809-82). English naturalist, known for his theory of evolution. *Origin of Species* is his famous work.

p. 170, *anthropomorphic* : tending to represent the Deity in the form of man or with bodily parts; attributing human affections and passions to God or the Deity.

p. 172, *phenomenological* : the division of any science which describes and classifies its phenomena.

